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THE PATHOLOGY OF ADOLESCENT SCOLIOSIS

BY

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Adolescent scoliosis is distinguished from other forms of scoliotic curvature by its incidence among young girls, by the special tendency to rotation of vertebrae which accompanies the lateral curves, and by the obscurity which surrounds its causation and pathology. This last feature has given rise to the synonym of "idiopathic scoliosis," in contrast to curvatures associated with recognized pathological conditions, such as congenital malformation of vertebrae, paralysis of spinal muscle-groups, or contractures following intrathoracic disease. Adolescent kyphosis is also of obscure origin; it differs from adolescent scoliosis in that it shows itself at a somewhat later age, it is far more frequent in boys than in girls, and it gives rise to little or no lateral curvature or rotation. Further, in adolescent kyphosis the *x*-ray examination shows early and striking changes in the vertebrae, fully described by Calvé and Galland (1930); whereas in adolescent scoliosis the *x*-ray appearances during the early stages are quite normal, the wedging of vertebrae being a late manifestation. Ambiguity has sometimes arisen in the literature owing to the fact that in true adolescent scoliosis there may be a backward or kyphotic element in the dorsal lateral curve; and also that in true adolescent kyphosis there may be a slight and unimportant lateral deviation. There is, however, no clinical difficulty in distinguishing between the two conditions, and there is little doubt that they are pathologically quite distinct. In this paper I confine myself entirely to the question of the causation and pathology of adolescent scoliosis.

Many theories have been put forward to account for a malady so enigmatic in origin and so severe in its results. Perhaps that most widely held is to the effect that the curvatures are a consequence of some form of weakness of the muscles or other structures of the spine. This view has recently been restated by Hauser (1937), who suggests the term "decompensation" for the hypothetical muscular insufficiency. It is difficult to accept weakness as the sole or principal cause, since the condition may show itself in girls who are muscularly vigorous and strong, leading apparently normal and healthy lives, and may advance to severe and permanent deformity without sign of any malady other than that of the curvatures themselves. It is true that the condition is sometimes seen in girls of the "slender maiden" type, who have "shot up" beyond their strength. Such cases are usually mild and postural in type, since the majority of severe cases show themselves prior to the period of rapid growth. In the "slender maiden" type it seems probable that the bodily weakness may be a subsidiary though not the sole cause of the abnormal posture. Inequality in the length of the legs, unilateral occupations, and defective respiratory movements of one side of the chest have been put forward as causes. Such factors may give rise to an adaptive curvature, but I have not been able to find clinical evidence of their capacity to cause the characteristic symptoms of true adolescent scoliosis, with its secondary curvatures and rotation and its occasional progressive tendency. Analysis of the aetiological factors and of the symptoms has led me to the belief that the posture and deformities are not due to any form of weakness, but, on the contrary, are the result of long-continued abnormal muscular contraction.

Aetiology

Adolescent scoliosis affects girls far more frequently than boys. It shows itself in late childhood and early youth, and is thus associated with the approach or establishment of puberty.

Social Incidence.—Taking my personal experience over a number of years, I believe that adolescent scoliosis is relatively more frequent among the children of the comfortably-off than it is among the hospital class. I have been impressed by its incidence in the sedulously reared only daughters of well-to-do parents. In the hospital class it is the more carefully tended children that are usually affected; among the neglected children of the very poor it is rare. It is thus certainly not a deprivation disease; on the contrary, it appears to be associated with too anxious and solicitous an upbringing.

Recent Incidence.—There has been a massive reduction in the number of cases during recent years. This applies to all social classes and to all institutions in Sheffield and, so far as my inquiries go, to the country generally.

Characters of Curvatures

So gradual is the development of the faulty posture that it is usually impossible to fix the time of its origin; indeed, it is often discovered by chance. At this stage the girl does not complain of pain, fatigue, or any other symptom, and seems unaware of the defect in her attitude. The curvature is known as "postural" or "functional" if the form of the vertebrae is unaffected, so that it is possible to redress the attitude; when deformation of the vertebrae has occurred the attitude cannot be fully redressed, and the curvature is known as "structural" or "organic." In structural curvatures the attitude is often accentuated by a superadded functional element, indi-

cating an influence at work which tends to increase the deformity. Functional cases usually recover with treatment, but occasionally they pass into the structural phase while under observation. If the case is structural when first observed, evidence is lacking as to whether an earlier functional phase has been present. The disputed question as to whether certain cases are structural from the beginning is therefore at present undecided. The various anatomical types of curvature need not here be described.

Explanation of Symptoms

The posture and deformity of adolescent scoliosis are an exaggeration of a physiological attitude, that of bashfulness. On more than one occasion I have known an access of bashfulness during medical examination to be mistaken for a postural scoliosis. At the approach of puberty the girl loses the care-free movements of childhood and becomes modest, self-conscious, and sometimes bashful. Modesty is an instinctive safeguard for immaturity. The bashful attitude is also a defensive one; it depends upon the activity of an ancestral postural reflex, and has the effect of a modest self-effacement which conceals the lineaments of the figure by the sidelong posture and the torsion of the trunk. It is thus in complete contrast to the erect attractive poise of fully developed womanhood.

Natural modesty is physiological, but it may deepen into a morbid self-consciousness, and the associated attitude of bashfulness may then become habitual. In such instances the ancestral postural reflex may assume control, the attitude passing by insensible gradations into the pathological posture of adolescent scoliosis. In unfavourable cases the long-continued muscular contraction may induce structural changes in the young and plastic tissues, and the spinal deformity becomes organic.

In the form of curvature most usually seen the predominant curve and rotation are to the right in the dorsal region, with a subsidiary curve to the left in the lumbar region. The abnormal posture is thus most noticeable in the neighbourhood of the right shoulder. The explanation of the frequency of this particular curve may be that the posture is essentially expressive, and that in expressive gestures it is the right upper limb that is usually called into play. It is the right hand that is waved, the right fist that is clenched, and the instinctive posture of adolescent scoliosis is also to the right. In a left-handed girl suffering from scoliosis the curve was to the left in the dorsal and to the right in the lumbar region.

Rotation is thus to be regarded as part of the attitude brought about by muscular contraction, and not as a mere concomitant of the lateral curves, to which it is often quite disproportionate in grade. Rotation is a far more noticeable feature in adolescent scoliosis than in other types of lateral curvature, in which it is a concomitant. A very different pathological condition serves to illustrate the origin of spinal curvatures in long-continued postural muscular contractions. The morbid changes of encephalitis lethargica sometimes lead to the release of ancestral postural reflexes in a perverted form. The bizarre attitudes which result may give rise in young subjects to structural spinal deformities (Abercrombie, 1928).

Significance of the Aetiological Factors

The import of the incidence among young girls has been discussed. Typical adolescent scoliosis is also occasionally seen in boys. At a stage in their development boys sometimes show well-marked feminine characteristics and become as modest and as bashful as a girl, and are thus also open to the train of pathological events which have been described. The disproportionate incidence among more carefully nurtured children suggests that too anxious a solicitude in upbringing may impair self-reliance and induce a morbid self-consciousness. Several writers have noticed an abnormal psychological state associated with scoliosis. It is not easy to define. The girls are not hysterics; the disturbance is at the level of instinctive behaviour, and the defect is not so much in the personality as in its environment.

The diminished incidence in recent years corresponds to a more rational system of education, with its games and open-air sports. The results are to be seen in an upright carriage and a demeanour at once modest and self-reliant. In former days false modesty seems sometimes to have been taught as part of the curriculum. A manual of conduct published in 1871 recommends "a pleasing modest reserve and retiring delicacy that blushingly withdraws from the gaze of admiration." It is interesting to recall that this was the period of the routine use of the back-board.

Instances occur, although they are rare, in which the symptoms of adolescent scoliosis show themselves after an acute infection. The interpretation appears to be that during a critical stage of a girl's development the debili y of convalescence may affect her mentality, rendering her timid and self-conscious. This mental change in association with the bodily weakness may induce scoliosis. In one case severe adolescent scoliosis followed directly upon an attack of acute chorea.

Treatment

Although it is difficult to estimate the results I believe that the recognition of the psychological element in adolescent scoliosis increases the efficiency of treatment, and it certainly adds greatly to its interest. The relatives should be instructed that the anxiety which they so often show is unwholesome for the patient, and they should be forbidden to worry her about her attitude. Treatment should be directed to both mind and body. Psychological treatment should be indirect. The girl should be placed in a healthy and cheerful moral atmosphere. The less said about the curvature the better. In the treatment of postural curvatures in my judgment it is best to disregard the individual curves altogether and to rely on free-standing exercises under a judicious and trained instructress. The object of the exercises is to give confidence and to improve the bodily poise, and it is essential that they should be enjoyable.

Structural curvatures are a more difficult problem. Much ingenuity has been employed in the design of exercises to correct special curves and to strengthen special muscle-groups. However skilfully carried out, the results are disappointing. I incline to the view that in place of this highly specialized treatment equally good results are obtained by general exercises of an invigorating and enjoyable character designed to improve the bodily poise. With some diffidence I record the impression that the condition may be sometimes actually aggravated by too intense an attention directed to particular curves. In overgrown girls it is reasonable to order a daily period of dorsal recumbency. It is outside the scope of this paper to discuss the treatment of severe structural curvatures by means of forcible reduction, fixed apparatus, or surgical operation.

A few words may be added with regard to prevention. Parental solicitude should not be allowed to interfere with the development of self-reliance. A free and con-

fident bearing should be encouraged by games and sports, and there should be friendly comradeship with the opposite sex.

Summary

The posture and deformity of adolescent scoliosis have an affinity with the attitude of bashfulness. This attitude is the expression of the modesty of puberty; it is defensive in origin, and is dependent on an ancestral postural reflex. In certain cases the modesty of puberty deepens into a morbid self-consciousness associated with an exaggeration of the postural reflex of bashfulness; and the consequent long-continued muscular contraction induces the scoliotic posture and deformity. Recognition of the psychological element increases the scope and effect of treatment.

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AN OUTBREAK OF PARATYPHOID AND DYSENTERY IN A TRAINING-SHIP

BY

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An outbreak of paratyphoid fever occurred in a Mersey training-ship during September, October, and November, 1937: this was of particular interest in that it happened in a closed community and ran concurrently with a smaller outbreak of Sonne dysentery. The vessel is a third-class cruiser, about fifty years old, used in training boys for the lower deck of the Royal Navy or Merchant Service. The ship's complement consisted of the commander, thirteen officers, and 112 boys; in addition the commander's wife and a maid live in the vessel. A local practitioner is responsible for the medical care of the boys.

On October 5, 1937, the following facts were ascertained by the senior assistant port medical officer:

1. That on September 18 two boys, suffering from pyrexia and malaise, were sent to Birkenhead General Hospital for observation, and were subsequently diagnosed as cases of Sonne dysentery; one of them returned to the vessel on September 29, but was again taken ill, and was readmitted to hospital on October 3 with paratyphoid fever.

2. That on September 19 twelve boys complained of diarrhoea. All recovered in twenty-four hours.

3. That on October 1 one boy, and on October 3 two boys, were removed to Birkenhead General Hospital for observation.

4. That on October 4 the visiting medical practitioner was informed by the bacteriological department of the Birkenhead General Hospital that the patients admitted on October 1 and October 3 were suffering from paratyphoid fever.

On October 5 the medical officer of health for the City and Port of Liverpool received notification of a case of ? paratyphoid fever in the training-ship; the boy was examined by the senior assistant port medical officer and removed to Fazakerley Hospital. Bedding and effects of the patient were collected for disinfection and the ship's hospital washed down and sprayed by an inspector of the Port Health Authority.

General Investigations

The boys returned from summer leave on August 26, 1937, and a number of new boys joined between that date and September 30. The latter group included one (G. R. N.) who will be referred to again later in the report; he joined on September 9, reported sick on September 17 with indefinite symptoms, and remained in the ship's hospital until September 24. The following day he went home on week-end leave and did not return to the vessel, his parents withdrawing him for health reasons. (This boy was subsequently visited at home, and his parents persuaded to allow him to enter hospital.) Except for the aforementioned cases no other sickness was reported.

Water and Food Supplies

Drinking-water is obtained from a hydrant on Rock Ferry Pier four times daily, conveyed to the vessel by waterboat, and pumped into storage tanks on the upper deck. The tanks are used exclusively for drinking-water. River water is utilized for flushing latrines, urinals, and lavatories; there is no possible contamination of the drinking-water from this source. Food supplies are kept in storerooms used especially for that purpose, and are the direct responsibility of the cook, who has the assistance of four boys in the galley. Milk in bulk is used only for cooking; for drinking purposes each boy receives a pint of pasteurized milk daily in a sealed bottle.

Lavatories, etc.

The lavatory accommodation was inspected; it is situated forward, and consists of trough-closets without partitions. The contents of one large tank flushes the system four times a day; a trough-type urinal is similarly flushed. A separate pedestal water-closet and urinal are available for use at night, but are locked during the day. The hospital has a separate water-closet. As the night urinal opened on the sleeping quarters representation was made that it be completely boarded up, and a new scuttle cut into the ship's side for ventilation; this was carried out at once.

Personal Hygiene

The commander undertook that the crew would adhere strictly to the following instructions:

1. That the boys wash and scrub their hands with hot water and soap immediately after micturition or defaecation.

2. That latrines and urinals be flushed every hour, and seats thoroughly scrubbed each day with disinfectant.

3. That handling of food be restricted to the cook and galley staff (four boys); that no other boys be allowed in the galley.

4. That uncooked vegetables, lettuces, etc., shall not be used.

5. That no new boys shall join the vessel during the present term.

6. That no boys be drafted to sea during the present term.

7. All home week-end leave to be stopped.

8. Football fixtures with other teams to be cancelled, but games ashore permitted among the boys themselves.

Sequence of Cases, and Measures taken after October 5, 1937

October 7.—One of the galley boys reported sick, with pain in the left upper abdomen; temperature 100° F.; he was removed to Fazakerley Hospital for observation. Blood was

taken for Widal test from twenty boys who gave a history of pyrexia and/or diarrhoea since August 26. Specimens of faeces and urine from the cook and four galley boys were forwarded to the City bacteriologist.

October 11.—Two boys with pyrexia removed to Fazakerley Hospital for observation. Blood for Widal test taken from the cook and galley staff.

October 12.—Eight boys with pyrexia and/or diarrhoea removed to Fazakerley Hospital for observation. Arrangements made for a daily "temperature parade" of all boys in the ship, and the results reported to the senior assistant port medical officer. All febrile cases, irrespective of symptoms, were drafted to hospital for observation.

October 13 to October 20.—Nineteen boys were segregated during this period.

October 18.—Blood was taken from the six remaining new boys who joined the vessel on or after August 26. Arrangements were completed for the routine examination of faeces from all aboard, and six specimens were submitted daily to the City bacteriologist.

October 31 and November 6.—Three boys on the former and one boy on the latter date were removed to Fazakerley Hospital.

November 8.—Two boys were readmitted to Fazakerley Hospital suffering from severe diarrhoea.

November 12.—A dysentery carrier was isolated from the routine examination of stools and removed to Fazakerley Hospital.

The question of preventive inoculation with T.A.B. was considered, but was rejected on account of the danger of masking future cases and the absence of evidence as to the advantage of such inoculation during the course of an epidemic. It was, however, deemed expedient to obtain permission of parents and guardians for the inoculation of boys should the contingency arise. This was obtained in all cases except those under the care of one voluntary society, which refused.

The total number of admissions to hospital for observation was forty-four (including three readmissions), and the following results were obtained:

Dysentery group	5
Widal +; *B. paratyphosus* B in faeces and/or urine ..	7
Widal −; *B. paratyphosus* B in faeces and/or urine ..	4
Widal +; faeces and urine −	4
Widal −; faeces and urine −	24
	44

Investigation and Progress of the Epidemic

The investigation of this epidemic was complicated by the presence of both paratyphoid B and Sonne dysentery; the fact that it was confined to a closed community where strict discipline could be maintained was of material assistance.

Dysentery Cases

A scrutiny of the bacteriological reports (Table I) reveals the isolation of *B. dysenteriae* Sonne from one patient (S. C.) who had no previous symptoms. This boy joined the vessel on July 14, 1937, and the dysentery epidemic began on September 18, when two boys (J. V. and R. W.) were sent to Birkenhead General Hospital. Next day twelve boys complained of diarrhoea, which cleared up in twenty-four hours. These facts were first reported to the Port Health Authority on October 5, following which a routine examination of faeces was instituted. From these examinations a positive return (S. C.) was made on November 9: the boy was removed to hospital, and since his segregation no further cases have occurred. In attacks of mild diarrhoea in two other cases the organism was isolated from the faeces; these patients were admitted to Fazakerley Hospital, one (W. G.) on September 11 and the other (K. C.) on September 12.

One case (J. V.) was of particular interest. This patient was discharged from Birkenhead General Hospital on September 28 and readmitted on October 3 with paratyphoid fever: he would therefore seem to have incubated paratyphoid during the course of his dysentery.

Paratyphoid Cases

The Liverpool Port Medical Officer was first notified of paratyphoid fever in the training-ship on October 5, and investigations were proceeded with to find the source of infection. Attention was directed to the water supply, food supply, galley staff, and the possibility of a carrier or missed case.

Water Supply

The storage tanks on the forecastle head and main deck were examined and samples taken by an assistant to the City bacteriologists, with the following results:

	Bacteria per c.cm. at 37° C.	Bacteria per c.cm. at 22° C.	B. coli absent in
Tank, main deck	.. 3	114	100 c.cm.
Tank, forecastle	.. 5	143	100 c.cm.

No organisms of the typhoid group were found in either specimen. After due investigation it was considered improbable that the water supply was the origin of the infection.

Food Supply and Galley Staff

Particular attention was directed to milk and uncooked vegetables, but it was considered unlikely that food was the origin of the outbreak. Samples of blood, urine, and faeces from the cook and four galley boys were submitted to the City bacteriologist. One of these boys (J. L.) was removed to Fazakerley Hospital on October 9 with paratyphoid fever. The blood Widal reaction was positive, and *B. paratyphosus* B was isolated from the faeces and urine. The results from the others were negative.

Carrier or Missed Case

It has already been noted that the boys returned from leave on August 26, and it was ascertained that none of them gave a history of any illness during the vacation. As a number of new boys had joined the vessel between August 26 and September 30 particular attention was directed to this group, and their individual medical histories were investigated. Among them was a boy (G. R. N.) who joined the vessel on September 9; eight days later (September 17) he was sent to the ship's hospital with indefinite symptoms, remaining there until September 24. The following day he returned home on week-end leave, but did not return to the vessel, his parents withdrawing him for health reasons. He was visited at home, and ultimately his parents consented to his removal to hospital. He was admitted to Fazakerley Hospital on October 13, and the next day *B. paratyphosus* B was isolated from the urine; the blood and faeces were negative. On two later dates (see Table I, G. R. N.) *B. paratyphosus* B was again isolated from the urine; both the blood and faeces still remained negative. He was discharged from hospital on November 15; but although at all times the blood Widal was negative and *B. paratyphosus* B was not isolated from the faeces, the fact that the urine was positive on three separate occasions and also that he was a new boy in the vessel seems to indicate that he was the origin of the outbreak.

A urinary carrier with a consistently negative Widal reaction is very rare, but a similar case has been reported by V. Glass and H. D. Wright (*J. Path. Bact.*, **45**, 438);

TABLE I

Case	Hospital		Faeces		Urine		Blood Widal		Remarks
	Admitted	Discharged	Date	Result	Date	Result	Date	Result	
G. R. N. ..	Fazakerley 13/10/37	15/11/37	14/10/37 17/10/37 17/10/37 20/10/37 21/10/37 22/10/37	Negative „ „ „ „ „	14/10/37 17/10/37 17/10/37 20/10/37 21/10/37 22/10/37 25/10/37 1/11/37 4/11/37	B. para. B + Negative „ B. para. B + Negative „ B. para. B + Negative „	13/10/37 15/11/37	Negative „	Joined training-ship as a new boy 9/9. Sick bay 17/9 to 24/9. Indefinite symptoms. Returned home on 25/9 and did not go back to ship. Admitted to Fazakerley Hospital 13/10 Diagnosis: Paratyphoid B; Urinary carrier
R. W. ..	Birkenhead General 18/9/37	29/9/37	20/9/37 24/9/37	Occult blood Sonne dys. +			11/10/37	„	Diagnosis: Sonne dysentery
J. V. ..	„ Readmitted 3/10/37	„	20/9/37 „	Occult blood Sonne dys. + Several examinations done. All negative (No dates given)			19/9/37 4/10/37 8/10/37	„ B. para. B 1/25 „ 1/2,500	Vomiting, diarrhoea, cough Diarrhoea and headache Diagnosis: (a) Sonne dysentery (b) Paratyphoid B
A. T. ..	Birkenhead General 1/10/37	23/11/37	6/10/37 11/10/37 18/10/37	B. para. B + „ Negative Examinations since—Negative (No dates given)		Negative „ „	4/10/37	„ 1/200	Pain in left loin, and rigors Pyrexia—no diarrhoea Diagnosis: Paratyphoid B
W. W. ..	Birkenhead General 3/10/37	„	6/10/37 11/10/37 19/10/37	Negative B. para. B + Negative Examinations since—Negative (No dates given)	6/10/37 8/10/37 19/10/37	Negative „ „	4/10/37	„ 1/100	Pyrexia and similar symptoms Diagnosis: Paratyphoid B
A. L. ..	Fazakerley 5/10/37	4/12/37	6/10/37 8/10/37 20/10/37 28/10/37 30/10/37 3/11/37 6/11/37 10/11/37 13/11/37 17/11/37	B. para. B + „ B. para. B ++ B. para. B + „ „ „ Negative „ „	6/10/37 8/10/37 20/10/37 28/10/37 30/10/37	Negative „ „ „ „	14/10/37	„ 1/20,480 B. typhosus (H) 1/640 B. typhosus (O) 1/20 B. para. B (O) 1/40 Salmonella 1/320	Sickness; headache; spleen palpable; ? 2 rose spots; general malaise Diagnosis: Paratyphoid B
J. L. ..	Fazakerley 7/10/37	„	9/10/37 20/10/37 23/10/37 27/10/37 29/10/37 3/11/37 6/11/37 12/11/37 13/11/37	B. para. B + „ „ „ „ Negative „ „ „	9/10/37 20/10/37 23/10/37 27/10/37 29/10/37 3/11/37 6/11/37 12/11/37 13/11/37 17/11/37	„ „ B. para. B + „ Negative „ B. para. B + Negative „ „ „	9/10/37	B. para. B (H) 1/1,000 Salmonella 1/1,000	Pyrexia Pain in left abdomen Diagnosis: Paratyphoid B
N. E. B. ..	Fazakerley 11/10/37	13/11/37	14/10/37 20/10/37 23/10/37	„ „ „	14/10/37 20/10/37 23/10/37 27/10/37 28/10/37 29/10/37	„ „ B. para. B + Negative „ „	13/10/37	Negative	Pyrexia Diagnosis: Paratyphoid—doubtful
W. G. ..	„	„	12/10/37 18/10/37 21/10/37 25/10/37	Sonne dys. + Negative „ „	12/10/37 18/10/37 21/10/37	„ „ „	12/10/37	„	Pyrexia Diagnosis: Sonne dysentery
K. C. ..	Fazakerley 12/10/37	20/11/37	13/10/37 14/10/37 28/10/37 1/11/37 4/11/37	„ Sonne dys. + Negative „ „	13/10/37 28/10/37 1/11/37 4/11/37	„ „ „ „	13/10/37	„	Pyrexia Diagnosis: Sonne dysentery
G. H. C. ..	„	28/10/37	13/10/37 18/10/37 22/10/37	„ „ „	13/10/37 18/10/37 22/10/37	„ „ „	„	„	Pyrexia Diagnosis—nil
G. B. ..	„	„	13/10/37 18/10/37 22/10/37	„ „ „	13/10/37 18/10/37 22/10/37	„ „ „	„	„	Pyrexia Diagnosis—nil
G. H. W. ..	„	„	13/10/37 18/10/37 22/10/37	„ „ „	13/10/37 18/10/37 22/10/37	„ „ „	„	„	Pyrexia Diagnosis—nil
A. G. ..	„	„	13/10/37 18/10/37 22/10/37	„ „ „	13/10/37 18/10/37 22/10/37	„ „ „	„	„	Pyrexia Diagnosis—nil
D. E. D. ..	„ Readmitted 8/11/37	„ Later Report	13/10/37 18/10/37 22/10/37 9/11/37 16/11/37 18/11/37 25/11/37 26/11/37 9/12/37 10/12/37	„ „ „ „ B. para. B + Negative „ B. para. B + Negative „	13/10/37 18/10/37 22/10/37 9/11/37 16/11/37 18/11/37 26/11/37	„ „ „ „ „ „ „	7/10/37 13/10/37 24/11/37	„ „ „	 Diarrhoea started 6/11 and continued to 8/11 Diagnosis: Paratyphoid B

TABLE I (*continued*)

Case	Hospital		Faeces		Urine		Blood Widal		Remarks
	Admitted	Discharged	Date	Result	Date	Result	Date	Result	
L. B. ..	Fazakerley 12/10/37		13/10/37	B. para. B	13/10/37	Negative	13/10/37	B. para. B (H) 1 2,560 B. para. B (O) 1 40 Salmonella 1 320	Pyrexia
			28/10/37	,,	28/10/37	,,			
			8/11/37	,,	8/11/37	,,			
			18/11/37	Negative	18/11/37	,,			
			25/11/37	,,					Diagnosis : Paratyphoid B
A. C. ..	,,	27/11/37	13/10/37	B. para. B	13/10/37	,,	11/10/37	B. para. B 1 320 Salmonella 1 2,500	Pyrexia
			28/10/37	,,	28/10/37	,,			
			8/11/37	Negative	8/11/37	,,			
			12/11/37	,,	12/11/37	,,			
			17/11/37	,,	17/11/37	,,			Diagnosis : Paratyphoid B
W. A. C. ..	Fazakerley 13/10/37	28/10/37					7/10/37	Negative	Pyrexia
			14/10/37	,,	14/10/37	,,	14/10/37	,,	
			19/10/37	,,	19/10/37	,,			
			21/10/37	,,	21/10/37	,,			Diagnosis—nil
G. H. G. ..	,,	,,	14/10/37	,,	14/10/37	,,	,,	,,	Pyrexia
			19/10/37	,,	19/10/37	,,			
					21/10/37	,,			Diagnosis—nil
S. R. S. ..	Fazakerley 13/10/37	2/11/37	14/10/37	,,	14/10/37	,,	14/10/37	,,	Pyrexia
			19/10/37	,,	19/10/37	B. para. B Negative			
					21/10/37	,,			
	Readmitted 8/11/37	9/12/37			25/10/37	,,			
					26/10/37	,,			Diarrhoea 6/11 to 8/11 : sent back to hospital
			9/11/37	,,	9/11/37	,,			
			16/11/37	,,	16/11/37	,,			Diagnosis : Paratyphoid—doubtful
			18/11/37	,,	18/11/37	,,			
J. S. ..	Fazakerley 13/10/37	27/11/37	12/10/37	,,	12/10/37	,,	7/10/37	B. para. B (O) 1 80 Salmonella 1 160	Pyrexia
			14/10/37	,,	14/10/37	,,			
							27/10/37	B. para. B (H) 1 160 B. para. B (O) 1 160 Salmonella 1 40	
			8/11/37	,,	8/11/37	,,			
			12/11/37	,,	12/11/37	,,			Diagnosis : Paratyphoid B
J. G. L. ..	,,		14/10/37	B. para. B	14/10/37	,,	7/10/37	Doubtful report	Pyrexia
							11/10/37	Salmonella 1 160	
			28/10/37	,,	28/10/37	,,			
			8/11/37	Negative	8/11/37	,,			
			12/11/37	,,	12/11/37	,,			
			17/11/37	,,	17/11/37	,,			Diagnosis : Paratyphoid B
R. M. H. ..	,,	27/11/37	12/10/37	,,	12/10/37	,,	7/10/37	B. para. B Type 1 80	Pyrexia
			14/10/37	,,	14/10/37	,,			
							27/10/37	B. para. B (H) 1 80	
			8/11/37	,,	8/11/37	,,			
			15/11/37	,,	15/11/37	,,			
			17/11/37	,,	17/11/37	,,			Diagnosis : Paratyphoid—doubtful
B. D. ..	Fazakerley 14/10/37	28/10/37	15/10/37	,,	15/10/37	,,	7/10/37	Negative	Pyrexia. For observation
					21/10/37	,,			
			26/10/37	,,	26/10/37	,,			Diagnosis—nil
W. L. J. ..	Fazakerley 15/10/37	,,	16/10/37	,,	16/10/37	,,	18/10/37	,,	Pyrexia
					21/10/37	,,			
			26/10/37	,,	26/10/37	,,			Diagnosis—nil
A. E. H. C.	,,	,,	16/10/37	,,	16/10/37	,,	,,	,,	Pyrexia
					21/10/37	,,			
			26/10/37	,,	26/10/37	,,			Diagnosis—nil
C. S. L. ..	Fazakerley 16/10/37	,,	18/10/37	,,	18/10/37	,,	,,	,,	Pyrexia
			25/10/37	,,	25/10/37	,,			Diagnosis—nil
D. W. E. ..	,,	2/11/37	18/10/37	,,	18/10/37	,,	7/10/37	,,	Pyrexia
			25/10/37	,,	25/10/37	,,			Diagnosis—nil
J. B. ..	Fazakerley 18/10/37	,,	19/10/37	,,	19/10/37	,,	,,	,,	Pyrexia
			25/10/37	,,	25/10/37	,,			Diagnosis—nil
J. T. ..	,,	28/10/37	19/10/37	,,	19/10/37	,,	,,	,,	Pyrexia
			25/10/37	,,	25/10/37	,,			Diagnosis—nil
E. J. S. ..	Fazakerley 19/10/37	2/11/37	20/10/37	,,	20/10/37	,,	20/10/37	,,	Pyrexia. For observation
			25/10/37	,,	25/10/37	,,			Diagnosis—nil
R. E. G. ..	,,	,,	20/10/37	,,	20/10/37	,,	,,	,,	Pyrexia. For observation
			25/10/37	,,	25/10/37	,,			Diagnosis—nil
A. E. S. ..	,,	,,	20/10/37	,,	20/10/37	,,	,,	,,	Pyrexia. For observation
			27/10/37	,,	27/10/37	,,			Diagnosis—nil
B. J. N. ..	,,	,,	20/10/37	,,	20/10/37	,,	,,	,,	Pyrexia. For observation
			27/10/37	,,	27/10/37	,,			Diagnosis—nil
C. S. S. ..	Fazakerley 20/10/37	5/11/37	21/10/37	,,			22/10/37	,,	Pyrexia. For observation
			25/10/37	,,	25/10/37	,,			Diagnosis—nil
D. B. C. ..	Fazakerley 31/10/37	9/12/37	22/10/37	,,			7/10/37	,,	Pyrexia. For observation
			1/11/37	,,	1/11/37	,,	1/11/37	,,	
			4/11/37	,,	4/11/37	,,			
			16/11/37	,,	16/11/37	,,	24/11/37	,,	Diagnosis—nil

TABLE I (*continued*)

Case	Hospital		Faeces		Urine		Blood Widal		Remarks
	Admitted	Discharged	Date	Result	Date	Result	Date	Result	
C. E. W. ..	Fazakerley 31/10/37		1/11/37	Negative	1/11/37	Negative	18/10/37	Negative	Pyrexia. For observation
							1/11/37	B. para. B (H) 1/160 B. para. B (O) 1/20	
			15/11/37	,,	15/11/37	,,	15/11/37	B. para. B (H) 80	
			17/11/37	,,	17/11/37	,,		B. para. B (O) 1/20	Diagnosis: Paratyphoid—doubtful
			23/11/37	,,				Salmonella 1/20	
E. W. B. ..	,,	27/11/37	21/10/37	,,			1/11/37	Negative	Pyrexia. For observation
			1/11/37	,,	1/11/37	,,			
			4/11/37	,,	4/11/37	,,			
			16/11/37	,,	16/11/37	,,			
			23/11/37	,,					Diagnosis—nil
C. J. S. ..	Fazakerley 5/11/37	,,	22/10/37	,,					Pyrexia. For observation
			8/11/37	,,	8/11/37	,,	8/11/37	,,	
			15/11/37	,,	15/11/37	,,			
			17/11/37	,,	17/11/37	,,			Diagnosis—nil
J. A. V. ..	Fazakerley 6/11/37		29/10/37	,,					Pyrexia. For observation
			6/11/37	,,					
			8/11/37	,,	8/11/37	,,	8/11/37	,,	
			15/11/37	,,	15/11/37	,,			
			17/11/37	,,	17/11/37	,,			Diagnosis—nil
S. C. ..	Fazakerley 12/11/37		9/11/37	B. dys. Sonne +	15/11/37	,,	15/11/37	,,	Dysentery carrier. Joined vessel 14/7; leave, 1/8 to 20/8. No history of any illness
			15/11/37	,,					
			29/11/37	Negative	29/11/37	,,			
			3/12/37	,,					
			6/12/37	,,					Diagnosis: Sonne dysentery carrier

TABLE II.—*Paratyphoid Cases, including Doubtful Cases*

Sept. 17 (G. R. N.)

Oct. 1. (A. T.) Oct. 3 (J. V.) Oct. 3 (W. W.) Oct. 5 (A. L.) Oct. 7 (J. L.)

Oct. 11 (N. E. B.) (?) Oct. 12 (L. B.) Oct. 12 (A. C.) Oct. 13 (S. R. S.) (?) Oct. 13 (J. S.) Oct. 13 (J. G. L.) Oct. 13 (R. M. H.) (?)

Oct. 31 (C. E. W.) (?)

Nov. 8 (D. E. D.)

had the organism been isolated on one occasion only, suspicion would naturally have fallen on the technique employed in collecting the specimen, but it would appear more than unlikely that the specimens of urine from this particular patient could be contaminated accidentally on three different dates. On October 1—that is, fourteen days after this boy first entered the ship's hospital—a case of paratyphoid was removed to Birkenhead General Hospital.

Table II shows the incidence of the paratyphoid cases, including doubtful ones, and it will be observed that, assuming G. R. N. to be the origin of the epidemic, a group of five cases occurred between October 1 and October 7; another group of seven cases between October 11 and October 13; one doubtful case on October 31; and the last one on November 8. This seems to indicate that the removal of the original source of infection, plus the rigid carrying out of the personal hygiene instructions, was successful in cutting short the outbreak. In addition twenty-four boys who at the daily "temperature parade" had shown a rise were sent to hospital for observation; repeated examinations of blood, faeces, and urine of this last group were negative. The type of infection was not severe: there were no deaths; one patient was seriously ill but subsequently recovered; the remainder had an uneventful convalescence.

Summary

1. This is the record of an outbreak of intestinal infection in a training-ship, due to *B. paratyphosus* B and *B. dysenteriae* Sonne.

2. The first case of illness was that of a new boy, shown to be a urinary carrier of *B. paratyphosus* B: although blood and faeces were negative the organism was isolated from the urine on three separate occasions. A similar case is reported by V. Glass and H. D. Wright.

3. Of a total complement of 128, eleven boys were definitely paratyphoid and four doubtful; two of the latter had positive Widal reactions, but *B. paratyphosus* B was not found; the blood Widals in the others were negative, and *B. paratyphosus* B was isolated from only one specimen in each case.

4. Mass inoculation with T.A.B. vaccine was considered but decided against. Preventive inoculation of new boys has been advised.

5. Routine examination of faeces revealed a Sonne dysentery carrier as a possible cause of the dysentery outbreak. The organism was isolated in four other cases which showed dysenteric symptoms.

6. Instructions in personal hygiene were issued and stressed early in the epidemic.

7. It was decided to reconstruct the entire lavatory accommodation on modern lines before the end of Christmas leave.

8. Bacteriological investigation of faeces from the personnel has been completed and the epidemic is presumed to be over.

I wish to express my thanks to Dr. W. M. Frazer, medical officer of health to the City and Port of Liverpool, for permission to publish this report.

RECURRENT HAEMATEMESIS IN "BANTI'S DISEASE"

BY

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The physician who discusses the splenic anaemia syndrome finds himself in an uneasy and apologetic position. This is of course because the pathologist is able to make the statement that primary Banti's disease does not exist. But at the bedside the use of the term must be conceded to cover those instances of splenomegalic anaemia for which none of the many known causes can be found. This position is supported by Whipple's (1937) record of a group of thirty-one patients with "Banti's disease." In no fewer than fifteen of these it was not possible to find the causal factor. So that, as Castle and Minot (1936) put it, the problem posed by Banti still remains unanswered. There are three usual explanations employed "to empty the Banti pigeon-hole"—cirrhosis of the liver, obstruction of the splenic vein, and hepatico-lienal fibrosis. It is generally held that sections of these spleens reveal changes resulting from long-standing congestion. Whipple uses the term "portal hypertension," and notes that work in his clinic shows that a very high pressure occurs in the splenic vein; and the recollection of the tense bulging splenic veins seen at operation supports this. So that the present attack on Banti's disease is on the vascular and mechanical fronts. But before opening the question of haematemesis I would like to make a few more general points.

In the Liverpool Royal Infirmary records over the last ten years it has only been possible to find twenty cases where there was enough positive and negative evidence to fill the classical criteria. The main facts are embodied in Table I.

TABLE I.—*Twenty Cases of "Splenic Anaemia" at the Liverpool Royal Infirmary (12 men, 8 women; average age, 32.7 years)*

Average Blood Picture:

Haemoglobin, 48 per cent.; red cells, 3,500,000 per c.mm.; white cells, 4,200 per c.mm.; lymphocytic trend.

Platelet Counts:

Thrombocythaemic, 2 cases: normal limits, 2 cases; thrombopenic, 15 cases; no counts, 1 case. Average count in thrombopenic cases, 100,000 per c.mm.

Fractional Test Meals (12 Cases):

Low normal, 4; almost achlorhydria, 1 case; achlorhydria, 7 cases.

Haematemesis occurred in 9 and splenectomy was performed in 7 cases.

It would probably be agreed that the blood picture shown there is the one commonly found. Yet it must be emphasized that such haematological evidence is a shaky diagnostic basis. The red cells and the haemoglobin can be restored to normal by administering massive doses of iron (Davidson, 1934). This must be related to the frequent achlorhydria seen in these cases and those in the literature; though it is not known whether the achlorhydria is histamine-fast. The link between the splenomegaly and the absence of acid is still missing, as is the reason why both the giving of iron and the removal of the spleen correct the anaemia. The leucopenia almost always present in "splenic anaemia" occurs in other splenomegalies and is not diagnostically specific. The platelet count is seen to be low in most cases, but it must be remembered that recent haematemesis will cause an increase to normal figures: the existence of occasional normal and high counts is again an unreliable diagnostic criterion. The dangers of splenectomy in other than thrombopenic cases have been conclusively shown by Rosenthal (1925) and confirmed by Howel Evans (1928). But with these views Whipple (1937) has expressed disagreement. Because of the relationship of two of the patients cited in this paper an attempt was made to find recorded instances of "familial splenic anaemia," but without success. It was possible to examine six members of this family, but there was no other splenomegaly or anaemia. The only abnormality in the examination and investigation of these people was a persistent thrombopenia in the father of Case 3. Negative though this evidence is, the occurrence in first cousins is probably more than a coincidence.

Splenectomy and Haematemesis

Single or repeated haematemesis is of course a well-known feature of the splenic anaemia syndrome, but it is not so well known that splenectomy does not always remove the liability to this type of bleeding. It had been thought that once the patient had survived the immediate post-operative dangers, the later risk of thrombosis, and the possibility of hepatic cirrhosis he was out of the wood. But most clinicians have had an experience similar to that which aroused my own interest—the rapid and fatal exsanguination of a man apparently doing very well two years after splenectomy. Pemberton (1931) puts this into figures when he records that this symptom recurred post-operatively in 50 per cent. of a group of ninety-eight patients with "splenic anaemia" who bled before the operation. Death was a result of this haemorrhage in twenty-nine patients, against nine from thrombosis and four from hepatic cirrhosis in the larger group of 182 cases of "splenic anaemia." Similarly Dr. Howel Evans, who has followed a smaller series, has seen recurrence after operation in about half the patients and death in several. But it is important to note that only those who bled before removal of the spleen bleed afterwards. That these further bleedings are due to growth of the hepatic obstruction is an obvious solution. If we study the figures supplied by Whipple (1937) we will see that much of the recurrent haematemesis is found in the group with hepatic cirrhosis. But I would suggest that though this explanation is obvious it is not the only factor at work. If it were we should have to issue automatically a bad prognosis in these recurrences, and so overlook the patients in whom, as I hope to show, the problem is a simple mechanical one.

If a mouthful of rather stiff barium paste is allowed to slip down the oesophagus of patients who have vomited blood either because of cirrhosis of the liver or "splenic anaemia," the distended oesophageal varices can be outlined radiographically. Kirklin and Moersch (1931) in reporting this confirmed the varices by oesophagoscopy. These veins may extend throughout the lower two-thirds of the gullet; they are large, tense, and immediately submucous. A liability to bleed is obvious, though there may occasionally be another danger spot in distended gastric veins. Kegaries (1934) has shown that the venous bed at the lower end of the oesophagus has three connexions: directly from the portal system via the coronary vein along the lesser curvature of the stomach; indirectly from the splenic pedicle by the vasa brevia; and to the superior vena cava via the azygos veins. In hepatic cirrhosis, then, there will be dilatation of all the veins in the portal system. And the liver will be "by-passed" by a distended coronary vein to oesophageal varices. In "splenic anaemia" without cirrhosis of the liver the venous congestion in the splenic bed will cause the vasa brevia to open up and varices will be formed by the second mechanism. The coronary vein has been tied with good results—as regards haematemesis—when dilated and without result when of normal size (Rowntree, Walters, and McIndoe, 1929). But it

cannot yet be stated (Walters, personal communication) whether the size of the coronary vein can determine the site of venous obstruction, though it is likely that the size of this vein at operation will be a guide as to whether there is enough venous block in the liver to produce oesophageal piles. There is no need to discuss here the possibility of superior vena cava block causing varices; but it must be clear that once the veins in the lower end of the oesophagus become distended they are columns of blood in direct connexion with the superior vena cava and unprotected by valves.

Operation for Relief of "Splenic Anaemia"

With these details of the vascular mechanisms in mind it is possible to examine the various operative methods of relieving "splenic anaemia." An example of the effect of splenectomy on a patient who had shown previous haematemesis is seen in Case 1. The effect of ligation of the coronary vein has already been dealt with. Warner (1929–30) has reported the result of tying the splenic veins in a boy with "Banti's disease" showing a large liver and ascites. The rationale was to lessen the blood flow through the spleen, and there was a marked immediate improvement. Splenectomy was subsequently necessary, and the patient has been well for the last five years (Warner, personal communication). Ligation of the splenic pedicle has been suggested by McNee (1931), by Graham Bryce (1932), and by Howel Evans (1936). Watson (1935) has reported a successful instance of this operation very similar to Case 2. The patient was a woman, the usual criteria of "splenic anaemia" were present, and she had reached the stage of ascites. Because of adhesions splenectomy was not feasible and the whole pedicle was tied. The spleen became very tender and there was a post-operative thrombosis, but ultimately recovery was complete. Three years later there were no symptoms. The blood picture being slightly subnormal in all respects—as in Case 2—Case 3 is presented as another example of the results of pedicle ligation.

Case 1

A furnace-man, aged 32, was admitted under the care of Dr. A. Douglas Bigland in October, 1935. There was no familial splenomegaly and no residence abroad, and the only previous illness was typhoid fever at the age of 15. There had been a haematemesis six years before, another three years before, and one just before admission. A sallow pallor had slowly appeared, and there had been some symptoms of anaemia. The spleen was found to be one fingerbreadth below the costal margin with no hepatomegaly or ascites. No free hydrochloric acid was produced by a gruel test meal. The barium meal showed no gastro-intestinal abnormality. Dr. Howel Evans reported the blood picture to be: red cells, 3,400,000 per c.mm.; haemoglobin, 35 per cent.; leucocytes, 1,125 per c.mm.; platelets, 122,000; and halometer reading, 7.17 microns. The bleeding and clotting times were unchanged, the fragility normal, and the serum Wassermann negative. By means of large doses of iron for two months the haemoglobin was raised to 80 per cent. and the red cells to 5,000,000. Since several platelet counts showed a consistent reading in the neighbourhood of 100,000 splenectomy was decided on and was carried out by Mr. Hugh Reid. Section of the spleen showed the "diffuse fibrosis usually associated with Banti's disease." In the post-operative period the platelet count did not rise above 700,000 per c.mm. and no thromboses occurred. The patient returned to work soon afterwards and remained well even without iron.

For follow-up purposes he was seen ten months later; he felt very well, was working, and there had been no recurrence of bleeding. The haemoglobin was 100 per cent., the red cells 5,600,000 per c.mm., the leucocytes 12,800 per c.mm., with slight lymphocytosis, reticulocytes 1.5 per cent., and halometer reading again 7.17 microns. The platelet counts were 165,000 and 186,000 per c.mm. on successive days. On giving a gruel test meal there was again no free acid secreted, but a moderate amount appeared after histamine. Search for oesophageal varices, which was not specially made prior to the operation, showed these to be present and distended sufficiently to be easily recognized by a barium swallow.

Case 2

This patient, a boy of 14 who has for many years been under the care of Mr. J. T. Morrison, to whom I am indebted for permission to publish the case, is an only son and first cousin to Case 3. There was no other instance of splenomegaly or anaemia in the family, and those of his relatives I was able to examine were all normal. From 1929 to 1931 he was in hospital most of the time with the sequelae of an appendix abscess and empyema. There was then no splenomegaly, and two blood counts showed a secondary anaemia and leucocytosis. From 1932 to 1935 there were four haematemeses, and he was in hospital several times. Clinically there was anaemia, some stunting of growth, and a spleen enlarged to an inch below the costal margin. A typical blood count was: red cells, 3,300,000 per c.mm.; haemoglobin, 45 per cent.; leucocytes, 2,500 per c.mm.; and platelets, 137,500 per c.mm. The serum Wassermann was negative, as were those of his parents; the bleeding and clotting times and the blood fragility were within the normal ranges. Operation was refused until 1935, by which time ascites had appeared. When the abdomen was opened the spleen was found to be so adherent that removal would have been impossible. Mr. Morrison therefore tied the splenic pedicle vessels. Recovery from operation was rapid, and the boy gained his proper weight and height. Within a few months he was able to play games for the first time for several years.

I examined him two years later. He was then a well-grown boy, but the olive tint of the face persisted. The rounded splenic edge could be felt on inspiration. The gruel test meal revealed small amounts of free acid. The blood picture (no iron had been given since the operation) showed: red cells, 4,624,000 per c.mm.; haemoglobin, 95 per cent.; leucocytes, 5,680 per c.mm.; reticulocytes, 1.5 per cent.; and platelets, 190,000 per c.mm. The fragility was unaltered. The radiologist was able to show well-filled oesophageal varices.

Recently, after four days of sore throat and pain on swallowing, another large haematemesis occurred, following which the spleen shrank so as to be almost impalpable. The liver was not enlarged, and there was no ascites or other evidence of portal cirrhosis. The oesophageal veins were again seen radiographically. Here once more the dangers to which the varices are exposed—perhaps this time there was an oesophagitis—were emphasized.

Case 3

A married woman, aged 24, was admitted to the Liverpool Royal Infirmary in September, 1936, under the care of Dr. Bigland. She had never been abroad and had had no previous illness of note. Despite this she had always been pale and tired. During the last five years there had been flatulent dyspepsia, and food seemed to stick at the level of the lower end of the sternum, and for the last year she had suffered from dyspnoea and substernal effort distress, possibly due to the anaemia. Just before admission she had vomited about two pints of blood. The facies was olive-tinted, the heart showed a basal haemic bruit, and a firm-notched spleen reached to the umbilicus. Dr. Howel Evans reported the blood picture as: red cells, 4,260,000 per c.mm.; haemoglobin, 50 per cent.; leucocytes, 2,250 per c.mm.; platelets, 136,000 per c.mm.; with pallor but no microcytosis of the red cells. The serum Wassermann was negative, and the clotting time, bleeding time, and fragility were within the usual limits. The stomach tube could not be swallowed, but the barium meal showed no gastric abnormality. Extensive oesophageal varices were present. For the next three months the patient was

treated with large doses of iron and weekly injections of liver extract. The details of the various blood counts are shown in Table II (personal observations). It was clear that the case was thrombopenic in type and suitable for splenectomy. The patient, however, preferred the simpler operation of ligation of the splenic pedicle, such as had been so successful with her cousin. Since it seemed to us that this procedure could do no harm ligation was deliberately undertaken. Mr. Hugh Reid opened the abdomen and found the liver macroscopically

TABLE II.—*Serial Blood Counts in Case 3*

Date	Red Cells (millions)	Leucocytes (per c.mm.)	Platelets (per c.mm.)
9/9/36	Haematemesis— two pints		
10/9/36	4.24	3,200	170,000
11/9/36	4.00	5,900	222,000
14/9/36	4.16	3,200	91,000
16/9/36	3.68	4,000	81,000
18/9/36	4.08	2,800	53,000
21/9/36	4.16	4,000	65,000
23/9/36	4.00	3,200	63,000
25/9/36	4.26	2,250	136,000
28/9/36	4.32	2,800	96,000
1/10/36	3.20	5,600	106,000
	Out-patient— liver and iron		
6/12/36	5.40	5,660	168,000
8/12/36	5.20	—	161,000
9/12/36	5.20	4,750	98,000
16/12/36	5.12	6,520	94,000
17/12/36	Operation		
18/12/36	5.30	16,000	200,000
19/12/36	5.36	16,000	200,000
20/12/36	5.44	14,600	367,000
21/12/36	5.60	9,600	523,000
22/12/36	5.40	—	745,000
23/12/36	4.80	11,500	300,000
24/12/36	5.04	—	504,000
25/12/36	5.20	6,200	196,000
29/12/36	4.80	—	216,000
30/12/36	5.20	—	400,000
31/12/36	4.64	—	—
1/1/37	4.16	12,800	249,000
2/1/37	4.20	11,200	550,000
3/1/37	4.24	—	424,000
5/1/37	4.96	—	291,000
7/1/37	4.70	—	450,000
9/1/37	Discharge. Convalescence with iron		
19/4/37	5.16 (Hb, 85%)	4,800	129,000
1/5/37	5.90 (Hb, 95%)	8,000	147,000

normal, the coronary vein not dilated, but the vasa brevia larger than usual. The splenic artery was tied in two places and the three splenic veins, each as large as one's thumb, were occluded. The post-operative period was stormy, and a good deal of pain arose from the tender spleen. Convalescence was slow, but four months after the operation the patient was able to get about, though pale and suffering from lassitude. The spleen, while considerably shrunken, was still two inches below the costal margin. Though the red cells were over 5,000,000 per c.mm. the haemoglobin was only 85 per cent., and leucopenia and thrombocytopenia were still present. The radiologist was able to show that the varices in the oesophagus were unaltered. Intensive iron therapy was prescribed, and slow improvement is taking place.

In addition to these three cases it was possible to examine radiologically two other patients who had been subjected to splenectomy for classical "Banti's disease." In a young man who had had haematemesis both before and since operation there were extensive varices throughout the lower two-thirds of the oesophagus. In a middle-aged woman, in whom there had been no bleeding but in whom hepatic cirrhosis had been found at operation, no varices were to be seen.

The results of pedicle ligation will be of interest to those who advocate the operation. The general effect in Case 2 can be described as excellent, since the lad has grown to his proper height and weight and is able to follow a normal life. Locally the spleen has shrunk remarkably and cirrhosis of the liver has not appeared. Yet his life is hazarded by a problem in vascular mechanics. In Case 3, where the ligation was more deliberately carried out, the result was not so good, but further improvement may be seen. Though the red cells and haemoglobin are kept at healthy levels with the use of iron, there are still many general symptoms. The spleen has been reduced, but it is even now too big to be regarded as inactive. The varices, and therefore the risk of further haematemesis, seem unaltered. There was a good deal of post-operative pain and reaction, as would be expected with such a drastic interference with the blood supply. To counterbalance this there is probably a lower immediate risk, and certainly from the low platelet rise much less danger of thrombosis. But on the whole the patient would have been better off with splenectomy, and may even yet need it. From this small experience one might suggest that ligation of the pedicle may be useful in two situations: where the platelet level is normal or high and splenectomy is likely to be followed by a thrombocythaemia of over 1,000,000 per c.mm.; and at those laparotomies where the adhesions are too thick for safe splenectomy.

It becomes clear, then, that the post-operative study of this type of patient shows that whether the dilated veins at the cardia are formed either from portal obstruction or from a more local obstruction they persist after splenectomy and pedicle ligation. The fact that half the individuals with previous haematemesis do not bleed again is probably due to lessening or stoppage of the blood flow upwards through the vas brevia. That the other half do bleed again is due to the direct communication between the varices and the superior vena cava. Portal obstruction is therefore not essential to maintain the distension. No doubt the bigger the veins are before operation the more likelihood there is of subsequent haemorrhage. It is a fair analogy to point out that cure of varicose veins in the leg is not attained by distal ligation. The proximal ligation or removal of oesophageal varices is a matter of great technical difficulty and beyond my province. Walters and Kegaries (1933) have suggested the submucous injection of sclerosing solutions. But one may conclude that in those instances where haematemesis follows splenectomy, and haemorrhage, not cirrhosis of the liver, is likely to be the cause of death, the purely mechanical problem of dealing with the varices will have to be faced.

Summary

It has been shown that, because of the persistence of oesophageal varices after operation in cases of "Banti's disease," neither splenectomy nor splenic pedicle ligation will prevent recurrence of haematemesis.

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THE ASSOCIATION OF TRAUMA WITH PROGRESSIVE MUSCULAR ATROPHY

BY

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We know little indeed about the aetiology of progressive muscular atrophy, but its association with trauma in a small percentage of cases has been described by eminent Continental neurologists during the past decade. Thus Alajouanine, Gopcevitch, and Meillaud (1930) gave an account of an interesting case of post-traumatic muscular atrophy, with an illuminating discussion on the subject. These authors divide such atrophies into different groups.

The Muscular Atrophy Groups

In the first group the muscular atrophy is localized to the region of the muscles in the neighbourhood of the injured joint. They state that to this group belong some of the amyotrophies of the periscapular region which may follow injuries to the shoulder-joint, and suggest that such amyotrophy is of reflex origin, as is indicated by the electrical changes and by the fact that after progressing for several months cases remain stationary or even retrogress. They define this type as "localized post-traumatic reflex amyotrophy."

In the second group the amyotrophy ensues rapidly upon the injury, and it develops on a paralytic background. Its distribution is generally radicular, and it is accompanied by sensory changes of a dissociated character which suggest that this type may follow minor traumatic fissures of the spinal cord, with resulting frustrated haematomyelia. In such cases the wasting, at first progressive, becomes stationary after a time. They describe it as spinal amyotrophy secondary to frustrated haematomyelia.

In a third group of cases the wasting develops more slowly. It has not been preceded by any notable paralytic phenomena and is not associated with sensory troubles or reflex abnormalities. The atrophy in such cases may be localized or diffuse and non-systematized. The electrical reactions are not myelopathic in type, but conform closely to the changes found in the myopathies. This group progresses for a time, but may later display a tendency to regression.

Descriptive Cases

Alajouanine and his colleagues describe the case of a man, aged 34, who was seen at the Salpétrière for a diffuse muscular atrophy which had slowly progressed over a period of twelve years. The condition had begun two months after an aeroplane accident which had rendered him unconscious, and in addition to contusions had resulted in a split fracture of the head of the radius.

Another case of post-traumatic muscular atrophy is described by Horst Geyer (1934). This patient sustained a fractured tibia and fibula of the right leg in 1905. Four years later wasting was observed in the right thigh. Clubbing of the right foot was also present as a result of acute anterior poliomyelitis which had occurred in infancy. When examined by Horst Geyer in 1932, in addition to the typical claw hands, wasting and fibrillary tremors were widespread. The ankle and knee reflexes were practically absent, and there was no evidence of any pyramidal tract lesion. The small muscles of the hands and feet showed no response to galvanism or faradism.

The next case described by Horst Geyer is that of a male, aged 52, who in 1921 was struck in the small of the back by a branch of a tree. As a result of this he was unable to work for several weeks, but subsequently recovered. Eight years later he fractured his left leg in a motor-cycle accident. When examined at the clinic on May 9, 1930, the left leg showed marked generalized wasting. No abnormalities were observed in the rest of the body. When seen again three years later there were definite signs of progressive muscular atrophy, wasting and fibrillary tremors being present in all the limbs, though they were more marked on the left side than on the right.

Predisposing Factors

Geyer remarks that these two cases of his have in common the onset of progressive muscular atrophy some years after the original injury. In discussing the frequency and pathogenesis of the condition, he says that of the twenty-one cases which appeared at the clinic between the years 1919 and 1933 only one could be shown clearly to be due to trauma. He quotes Kure, who stated in 1931 that the innervation of muscles is fourfold—cerebral, spinal, sympathetic, and parasympathetic—and disturbance of any of these can lead to muscular atrophy. He points out, further, that many eminent neurologists are of the opinion that the main feature is a congenital predisposition, and that trauma has merely "pulled the trigger" in such cases. This theory, he says, is held by Strümpell, Probst, Oppenheim, and others. Marburg asserts that this is merely a possible theory, and that there is no anatomical evidence in support of it. Other authors maintain that one has to consider the question of an acquired disposition. Rose divides the predisposing factors into five groups: one is the simple type previously mentioned; the other four are acquired—namely, toxic; infective; those occurring after cerebrospinal diseases, such as anterior poliomyelitis; and, finally, the traumatic group, such as those associated with fractures. Other authors also stress the association with anterior poliomyelitis in some cases. Thiemn considers that there occurs in the traumatic cases a traumatic neuritis which spreads up towards the spinal cord, and eventually by association with the anterior horn cells produces progressive muscular atrophy. Another theory propounded is that, acting on the congenital or acquired predisposition, there occurs in the traumatic cases a shaking or

concussion of the spinal cord, which produces a molecular disturbance of the grey substance, and in this way leads to progressive muscular atrophy.

Influence of Injury

The question is further discussed, with the description of another case, by Brodin, Lhermitte, and Lehmann (1931). They state that for some years they have been greatly interested in the subject of the influence of injury on the production of maladies of the central nervous system, on account of the frequency with which certain associated complications appeared which apparently resulted from a "shaking" of the spinal cord. These authors state that they were able to produce progressive muscular atrophy in dogs as a result of trauma, and that pathological examination subsequently revealed that the grey substance of the cord showed degeneration, particularly the anterior horn cells. They were greatly interested in the latent intervals which separated the date of the injury from the first manifestation of the wasting, and describe the case of a patient aged 59 whose past history was entirely uneventful.

In 1925 he was caught between a heavy plank and a ladder after having fallen down several steps, and sustained severe contusions in the region of the dorsal spine. Some months after the accident there appeared very gradually a slight weakness of the right arm. Two years later he sustained a further injury when he fell from a height on to an obstacle and was rendered unconscious.

When seen by the authors in 1931 wasting and fibrillary tremors were well marked in the arm and shoulders, particularly on the right side. There were no abnormalities of sensation, but while the cutaneous reflexes were normal the tendon reflexes were completely abolished in all four limbs. The electrical reactions were correspondingly diminished. There was no sphincter trouble, and no sensory changes were present. The vertebral column did not show any sign of injury or other abnormality.

The authors point out that the latent interval, as manifested in this case, is quite the rule and should not detract from the diagnosis of progressive muscular atrophy, for, as they have shown, it is also borne out by animal experiment.

I shall now describe the history of a patient whom I saw myself on May 22, 1936.

The patient, a man aged 62, stated that for a year and a half there had been increasing weakness in the right arm, together with occasional twitching, as well as slight numbness of the fingers. The past history revealed that forty-two years ago he had sustained a very severe depressed fracture of the skull as the result of a jack falling on his head. Some years later traumatic epilepsy ensued, and this was relieved twelve years after the injury by Sir John Lynn-Thomas, who removed a piece of bone which was pressing on the motor area. The patient stated that he had remained quite well from that time until eight years ago, when the right leg began to swell and was painful. He found, however, that he was able to compensate for this by wearing an elastic stocking.

On examination the first thing to which one's attention was drawn was a very long and deep depression involving the left parietal, temporal, and frontal regions. Then one noticed that fibrillation was very marked on both arms and on both sides of the face. Wasting of muscles was pronounced in the region of the right shoulder and the right arm. The extensor muscles of the right arm were so impaired that he was unable to dorsiflex the wrist. There was the usual wasting, resulting in a typical claw hand. The right arm was flaccid and flail-like, and all reflexes were diminished.

A thorough examination of the central nervous system failed to reveal any other abnormality. The disks were clear and the fundus oculi was normal. The cranial nerves were normal; the pupils reacted to light and accommodation, and there was no "intention tremor" and no "Rombergism." The sense of position was not impaired, and sensation to heat, cold, pin-prick, and cotton-wool was normal. Speech was also unimpaired. The plantar reflexes were flexor, but the right knee-jerk was rather greater than the left knee-jerk. Muscular power, however, was unimpaired in the legs. The blood pressure was 130/80, and other systems of the body were quite normal.

Since I first saw the patient fibrillation of muscle has become widespread, but though wasting is more marked in the right arm it is as yet not present elsewhere.

I have quoted these cases together with the subsequent discussion at some length because, while British neurologists recognize that syphilis and acute anterior poliomyelitis are occasional aetiological factors in progressive muscular atrophy, the majority deny the association with trauma. For many years, however, eminent neurologists on the Continent have recognized that trauma is a definite causal factor in a small proportion of cases.

During the period 1925 to 1934, inclusive, thirty-one cases of progressive muscular atrophy were admitted to the Bristol Royal Infirmary, and in only three of these do the case notes include a history of injury. It is probable that this number would have been higher but for the fact that many physicians do not inquire about a previous history of injury in such cases because the importance of this is not recognized.

Commentary

There is really no evidence in favour of the idea that trauma merely "pulls the trigger" in cases where there is a congenital predisposition, nor is there any practical support for the suggestion put forward by Thiemn that an ascending neuritis occurs which ultimately involves the anterior horn cells and so produces the muscular atrophy. In the first place we do not generally find such changes with neuritis, and, secondly, symptoms of neuritis are conspicuous by their absence in the history of practically all the cases of post-traumatic progressive muscular atrophy. Localized reflex wasting after injuries of bones and joints is an entirely different condition. We are faced here with the problem of widespread progressive muscular atrophy developing in some cases years after a severe injury. It seems to me that, as some of the French authors have suggested, we are bound to assume that a molecular disturbance of brain or cord is occasioned by the injury. Is this followed by slow degeneration, or does it render the cells susceptible to the subsequent attack of an unknown virus or toxin? With regard to this it will be recalled that a most mysterious feature of the disease is the lack of correspondence between the pathological process and the symptomatology. It is possible, therefore, that degeneration of the Betz cells in the cortex and of the anterior horn cells in the cord may be occurring for some years after the injury before clinical signs become manifest.

In the present state of our knowledge, however, we can only speculate on the way in which the atrophy is brought about, and the purpose of this paper is primarily to put forward evidence that trauma is a definite aetiological factor in some cases of progressive muscular atrophy. From the medico-legal point of view alone it will be realized that this association is of very great importance.

Summary

1. Cases are described which show that trauma is a definite aetiological factor in some cases of progressive muscular atrophy.

2. The wasting of muscle is frequently not manifest until many years have elapsed since the original injury.

3. The problem of the way in which the atrophy is brought about is discussed.

4. From the medico-legal point of view alone the subject is of very great importance.

I am indebted to Dr. M. E. Disney, medical registrar, for assistance with the case notes at the Bristol Royal Infirmary.

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AETIOLOGY OF ACUTE APPENDICITIS*

BY

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I. The History of Acute Appendicitis

Although appendicitis is usually regarded as a disease of modern civilization a small number of Egyptian mummies have been found to possess unmistakable signs of chronic inflammation of the organ, and in one case, that of a young royal princess, an acutely inflamed and perforated appendix was beautifully preserved.

The first recorded case in modern Europe was in a patient of Mestiver (Germany) in 1759, but the disease does not appear to have been recognized in England until 1812, when Parkinson diagnosed it in London. For some years the aetiology was obscured by the use of the term perityphlitis; but after 1820 appendicitis was increasingly recognized. Between 1820 and 1840 there were thirty-three recorded cases, and during the twenty years 1840–60 the number had risen to 102. In 1918 the *deaths* from the disease totalled 2,416. The figures showing the incidence of the disease at the Bristol Royal Infirmary are of interest. In 1880 out of 2,591 patients there were four cases of appendicitis. By 1905 the proportion had risen to sixty-four cases out of 3,762 patients, and by 1918 it had reached 113 appendicectomies in 4,021 patients.

DISTRIBUTION OF THE DISEASE IN THE COMMUNITY

Both sexes are equally prone to the disease, and the age of greatest liability is from 10 to 30 years. While it does occur in infants it is rare to find the disease before 3 years of age. It is also rare to find it at the other extreme of life, but it has been known to occur at 84 years. The disease is more serious at the extremes of life than it is during the years of its maximum incidence. As regards the influence of social position, the disease is definitely more common among the well-to-do; poorer people, especially those living in institutions, enjoy a relative immunity. For instance, there was only one case in ten years at Portland Prison. At Clifton College, Bristol, twenty cases occurred among 500 boys in five years, while at Müller's Orphanage, also in Bristol, there were only four cases among 950 children in the same period.

NATIONAL DISTRIBUTION

The disease is commonest in the United States of America, where its incidence is nearly twice what it is in Great Britain. Holland and Sweden have an incidence equal to our own, but the disease is less common in Denmark, Italy, Spain, and Greece. In the West Indies it is extremely rare among the natives but relatively common among the white population. In the villages of India and China the disease is unknown, but it is seen in the towns, both among the white population and those natives who adopt a European diet. This in fact is true all over the world. Native peoples, among whom the disease has been previously unknown, become very prone to it as soon as they live on a European diet. In seeking a cause of appendicitis the following summary of historical facts will be found helpful.

1. The disease was present, but relatively rare, in this and other countries until the end of the nineteenth century, since when it has become increasingly common in most countries. The rise in England began in 1890, and was pronounced between 1895 and 1905. From 1905 onwards it has been fairly stationary.

2. The rise was at first most marked in the towns; later the rural districts were affected, until at present the incidence is the same for town and country.

3. Inmates of institutions, living on a plain diet, are less prone to the disease than are more well-to-do people.

4. The privations of the war did not affect the frequency of the disease.

5. Appendicitis is unknown in wild animals, while it is common among animals in captivity.

THEORIES OF CAUSATION OF APPENDICITIS

As with all diseases of unknown causation, theories of the cause of appendicitis abound. One of the earliest was that it was due to the replacement, by the water-closet, of the squatting position in the act of defaecation. Another was that the fault lay with the substitution of stone flour rollers by steel ones, but no pieces of steel have ever been found in the appendix.

Of greater interest is the theory that the disease is due to an alteration in the food habits of the people, resulting in a marked reduction of the cellulose intake. During the last forty years English diet has changed very considerably, and it is of interest to examine these changes to see whether they have any bearing on the causation of appendicitis.

(1) Since 1890 there has been a tremendous increase in the consumption of cocoa and chocolate; but these articles can be dismissed at once, since animals in captivity which develop appendicitis do not eat them.

(2) *Bananas.*—West Indian natives eat large quantities of bananas, but they do not develop the disease.

(3) *Butter.*—This commodity has always been plentiful.

(4) *Meat.*—There is a very close resemblance between the increase in appendicitis and the rise in imported meat in the period 1895–1905. During these years our meat imports doubled, both beef and mutton being affected. There is no doubt but that the average consumption of meat per head of the population increased parallel to the rise in appendicitis, but if we examine the problem further we find that large sections of the community were heavy meat-eaters before 1895. In 1889, for instance, Pearce's dining-rooms in London supplied 30,000 carmen daily with a lunch containing 5 oz. of meat, and each soldier in the British Army was allowed 12 oz. of meat a day, yet the incidence of appendicitis among them was very low.

(5) *The Reduction in Cellulose Intake.*—Between the years 1890 and 1915 the consumption of preserved meats, butter, tea, cocoa, chocolate, rice, bananas, etc., increased considerably, as has been mentioned, so that the older, coarser, cellulose-containing foods, such as swedes, turnips,

* The successful thesis entered for the Martyn Memorial Scholarship in Pathology in the University of Bristol.

carrots, parsnips, leeks, and cabbages, have been crowded out, and it is suggested that this reduction in the cellulose content of the diet is at least a prominent predisposing cause of appendicitis. The following points are of importance in this connexion:

(i) The time incidence is correct. Both occurred between 1895 and 1905.

(ii) Cellulose foods were in favour longer in the country than they were in the town, whereas nowadays country and town diets are alike.

(iii) In institutions the older, cheaper cellulose foods persisted longer than among the well-to-do.

(iv) Apes in captivity do not get the coarse fibrous food they do in the natural state.

(v) Rabbits on a cellulose-free diet get appendicitis.

(vi) The disease is also very common among the inhabitants of Tristan da Cunha, who live on an exceptionally low cellulose diet owing to the impossibility of growing cereals on the island.

OTHER CAUSATIVE FACTORS

1. It has been suggested that there is a relation between appendicitis and sore throats.

2. Trauma has inevitably been suggested as a cause.

3. Foreign bodies are sometimes found in inflamed appendices and may be at fault. Especially is this so when the foreign body is one, or more, oxyuris.

4. Faecal concretions are present in 15 to 20 per cent. of cases and in 10 per cent. of apparently normal appendices. Krogns found concretions in 35 per cent. of perforated appendices and in 27 per cent. of non-perforated appendices.

5. Kinks of all kinds have been accorded a causative function.

6. The disease has been said to follow chronic intestinal stasis.

II. The Bacteriology of Acute Appendicitis

Aschoff has done a considerable amount of work on the bacteriology of the disease, and gives his results in his monograph on appendicitis. The point he stresses is that the distal part of the appendix, where the inflammation usually starts, has a special bacterial flora of its own, different from that of the proximal part of the organ and certainly very different from the caecal flora. As examination proceeds from the proximal to the distal end of the organ there is first a reduction in the larger bacteria, especially of the spore-bearing organisms of the gas-gangrene group. There is a similar but less rapid reduction in the coliform Gram-negative organisms. The closer one gets to the apex the more Gram-positive organisms there are, but the larger cocci, streptococci, and diplococci disappear, until there only remain fine Gram-positive diplococci and rods (enterococci A and B, haemolytic streptococci). Smears from acute appendices do not usually show a pure culture; some coliform Gram-negative organisms are always present and may even be in pure culture. This bacterial flora is found equally in healthy and acutely inflamed appendices, and the important question arises as to how the fine Gram-positive organisms at the apex suddenly take on an increased virulence, sufficient to cause an acute inflammation of the organ. To this question Aschoff knows no answer. Ricker states that it is due to a circulatory disturbance of nervous origin, causing haemorrhagic infarction of the mucosa through which the organisms can enter. But appendices removed early in the course of the disease do not show this, and Aschoff maintains that no *demonstrable* circulatory disturbances arise.

Stagnation of Faeces.—Aschoff's experience is that acute appendicitis occurs more often in empty appendices than in those containing faecal matter, and he dismisses the presence of faecaliths as being purely fortuitous. He points out that the inflammation begins *distal* to the faecalith, not around it. (These points are discussed later.) Contrary to Rendle Short, Aschoff holds that diet is of no importance, except that perhaps the amount of food taken may be of some consequence. In his opinion figures concerning frequency of the disease among the various classes of people are useless, as they only take into account the cases which come to operation. But he is probably wrong here, for in such a disease the total incidence and the number of cases operated upon run parallel to each other. Aschoff believes that curved or bent appendices are more prone to the disease than straight ones.

Hilgermann and Pohl contend that the disease is caused by oral organisms which have reached the appendix; and while this may be true for the very few cases in which the pneumococcus has been found in pure culture, it probably does not hold generally, since one would usually expect a preceding history of rhinitis and/or pharyngitis from the virulent organisms.

III. The Purpose of the Present Investigation

This investigation was undertaken in order to elucidate, if possible, certain points about which Aschoff says more information is needed and to see whether the information gained would shed any light on the causation of acute appendicitis. In addition, a number of factors about which there is a difference of opinion and some factors of general interest were investigated. The investigation dealt with the following points:

1. The proportion, position, and importance of faecaliths and strictures.

2. The proportion of empty and full appendices affected.

3. The incidence of sore throats preceding the attack of acute appendicitis.

4. The proportion of bent and straight appendices affected.

5. The proportion of cases showing various symptoms, such as constipation, vomiting, etc.

6. The length of time taken for suppuration, gangrene, and perforation to appear in order to determine whether it is possible to construct a time-table of acute appendicitis, so that its condition may be clinically diagnosed from the time of onset of symptoms.

IV. Data obtained during Investigation

Proportion of Bent or Straight Appendices Affected

Bent appendices	15
Straight appendices	5

Incidence of Faecaliths and Strictures

Faecaliths only	14	Multiple faecaliths	3
Strictures "	9	Neither	3
Faecaliths and strictures	4		

Empty or Faeces-containing Appendices Affected

Containing faecal matter	15
Empty	5

Incidence of Various Symptoms

Constipation	8	Pain starting in R.I.F. and later moving to umbilicus	2
Vomiting	18		
Pain starting at umbilicus	15	Diarrhoea	1
" " in R.I.F.	3		

Incidence of Sore Throats

Acute sore throat up to 7 days before appendicitis	5
Chronic sore throat	2

Average Time Taken for Various Stages of Inflammation to Develop

Catarrhal inflammation	22 hours	(5 cases)
Suppurative „	24 „	(3 „)
Gangrene	26 „	(4 „)
Perforation	42 „	(8 „)

Range of Temperatures found in the Series

Subnormal	2	100.1°–101°	1
Normal	1	101.1°–102°	3
98.5°–99°	5	102.1°–103°	1
99.1°–100°	7		

Range of Pulse Rates found in the Series

80–85	6	101–105	0
86–90	4	105–110	1
91–95	4	111–120	4
96–100	1		

V. Examination of the Results obtained during the Investigation

INCIDENCE OF BENT OR STRAIGHT APPENDICES

75 per cent. of the affected appendices were markedly bent, thus confirming Aschoff's finding that bent appendices are more prone to disease than straight ones. A suggested reason for this will be given later in this paper.

INCIDENCE OF EMPTY AND FAECES-CONTAINING APPENDICES

Aschoff's opinion that diseased appendices are more often empty than full is not upheld, as 75 per cent. of the specimens contained either faecaliths or fluid faecal matter. This finding will be referred to again in the discussion as to the causation of acute appendicitis.

PROPORTION OF CASES ASSOCIATED WITH SORE THROATS

35 per cent. of the patients complained of a sore throat. Of these, 10 per cent. suffered from chronic sore throat, and in each case the appendix was found to be chronically inflamed. In the remaining cases the patients had never had a similar abdominal pain before, and no trace of chronic inflammation could be found in 90 per cent. of the appendices. These figures are suggestive, if nothing more, and it would appear that there is an association between at least *some* cases of appendicitis and a slightly preceding sore throat. The series of cases examined was not, however, large enough for any definite results to be obtained.

AVERAGE TIME TAKEN FOR VARIOUS STAGES OF INFLAMMATION TO DEVELOP

Some authors are of the opinion that a definite time-table for the various stages can be made out, but this is certainly not true of the present series of cases. The average time for gangrene to develop is only four hours longer than the average for catarrhal inflammation in a total of twenty-six hours. Perforation, however, seems to be definitely later than the onset of gangrene (forty-two hours as compared with twenty-six hours). The only inference which can be drawn from this part of the investigation is that where a patient has had a characteristic pain for two days, and has a pulse and temperature of 100 or over, the appendix is probably perforated.

PROPORTION OF CASES SHOWING VARIOUS SIGNS AND SYMPTOMS

A point of interest under this heading is the low proportion—40 per cent.—of cases with constipation, which is usually regarded as being one of the most characteristic symptoms. Vomiting—90 per cent.—was a much more reliable symptom.

In 75 per cent. of the cases pain began at the umbilicus, shifting later to the right iliac fossa. This figure corresponds exactly to the incidence of faecaliths (75 per cent.). Of the cases with faecaliths 90 per cent. showed pain commencing at the umbilicus, which would indicate that the initial distension of the appendix is greater in these cases than in those where only a stricture is present. The pain due to the distension is referred to the midline at the umbilicus, because the gut is developed in the midline (Arey).

Two cases showed the interesting condition of pain commencing at the right iliac fossa and later becoming localized around the umbilicus. There is no explanation of this phenomenon in the literature, but both appendices revealed the presence of chronic strictures, and it may be that the localized pain in the right iliac fossa was due to the organ being unduly near the peritoneum of the abdominal wall, so that it was infected early. Simultaneously the stricture was in effect becoming thicker from the mucosal hypertrophy which always occurs and was damming back any faeces in the distal part of the appendix. This would produce distension and consequently pain around the umbilicus.

One case showed diarrhoea instead of constipation. No aperient had been taken.

RANGE OF TEMPERATURE AND PULSE IN THE SERIES

It was confirmed that in acute appendicitis it is unusual for the temperature to rise above 100°, with a corresponding increase in the pulse rate.

INCIDENCE OF FAECALITHS AND STRICTURES

Perhaps the most important point on which the results of this investigation differ from those of Aschoff is in the incidence and importance of faecaliths. Aschoff holds that their presence is purely fortuitous, and that the inflammation begins not around them but distal to them. In the present series faecaliths were found in 70 per cent. of cases and strictures in 45 per cent.; only 15 per cent. were free from either. In 20 per cent. both faecaliths and strictures were seen. Aschoff's finding that the tissue around the faecalith was not affected was not upheld in a single case. In every instance there were inflammatory changes of various degrees in the tissue around the faecaliths. In some cases there was chronic thickening, in others catarrhal inflammation, while two appendices were actually perforated around the faecalith. Of their importance, then, there can be no doubt, and the suggestion is made that they play an important part in the causation of acute appendicitis, upon the following lines.

For some as yet unknown reason faecal matter in the appendix becomes inspissated to form a hard structure—the faecalith. It is possible that its formation is linked up with the reduction in the cellulose intake, suggested by Mr. Rendle Short to be the cause of the present widespread nature of appendicitis. I would suggest: (*a*) That if the caecal contents are bulky from the presence of much cellulose the faeces will not enter the appendix as easily as do the very fluid faeces associated with a low cellulose diet. Hence faecaliths would only be able to form in a smaller number of appendices, because a larger proportion would not contain any faeces for them to form from. (*b*) That once the faeces had entered the appendix the mucosal glands absorbed water from them. Now in the case of the faeces from a low cellulose diet the result is a hard mass which easily becomes impacted, but where the faeces contain a high proportion of cellulose the result is a softish fibrous mass which can easily be extruded and which would never evoke the inflammatory response which the hard faecalith calls forth.

Once the faecalith has been formed it is regarded by the appendix as a foreign body, so that an inflammatory

response is set up around it. If the faecalith is not very big the peristalsis of the appendicular musculature may be sufficient to force it into the caecum, after which it passes along the intestine. But the inflammatory response it has evoked results in the formation of fibrous tissue—a stricture—and it is noteworthy that all the strictures in the present series were found in the same situation as the faecaliths—that is, at the proximal end of the organ. If, however, the faecalith is too large to be forced into the intestine the inflammatory response will be all the greater. The resulting oedema and compression of the surrounding tissue will compress first the lymphatics and veins, and later perhaps the arteries which drain and supply the apex of the organ. Hence it is usually at the apex that the mucosa is first seriously damaged. Once this has happened the small Gram-positive cocci and rods which Aschoff consistently found can make their way through the mucosa, become increasingly virulent, and set up an acute inflammation.

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MASSIVE SPONTANEOUS INTRAPERITONEAL HAEMORRHAGE

BY

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Massive intraperitoneal haemorrhage in the male in the absence of trauma or gross visceral disease is rare, and for that reason it was thought justifiable to put a further case on record.

Case Record

The patient, a man aged 52, was admitted to hospital with a history of a sudden onset of acute abdominal pain six hours previously. This had come on in the umbilical and hypogastric regions and doubled him up. It had since radiated to the right side of the chest and occasionally into the shoulders. On deep breathing the pain in the right hypochondrium was worse. He had had a similar attack of pain a week before. This was confined to the umbilical region and had not radiated. It had lasted three days. During the whole of the week he had had two or three attacks almost daily, the pain lasting a few seconds. There was no history of indigestion and none of trauma, but some frequency and scalding of micturition was experienced. He had been on a diet for high blood pressure and had lost 2 stone.

The previous medical history—for which I am indebted to Dr. R. O. Knowles of Birkenhead, who sent the patient into hospital—showed him to have suffered from bronchitis for some time. He had had two attacks of pulmonary oedema, as well as anginal attacks, and his systolic blood pressure was 200 mm. Hg. For this he had been dieted. He was a fairly well built man, with an emphysematous chest. On admission he was pale and somewhat cyanosed, cold, and clammy. His pulse was 96 and temperature 96.8°. The whole of the abdomen was very tender, this being especially marked in the upper abdomen and right subcostal regions. There was no real rigidity and no loss of liver dullness. In view of the shocked condition of the patient, his history and build, it was thought that he might have an acute pancreatitis. However, though there was doubt as to the actual causative lesion, there was no doubt that the case was one of acute abdominal emergency and should be explored. The pulse had remained stationary during the period before operation, being 98, and his temperature had risen to 98°.

Under spinal anaesthesia the abdomen was opened through a mid-line supra-umbilical incision and was found to be full of blood. A considerable amount was evacuated, and the hand was passed to the splenic region as it was thought that there might have been a spontaneous rupture of the spleen. Unfortunately, the spleen could not be brought into the wound, but nothing abnormal was felt on palpation. The liver, gall-bladder, pancreas, stomach, and intestines were normal; there was no retroperitoneal mass of clot, which was looked for as it was thought that the bleeding might have come from an aortic abdominal aneurysm. The kidneys felt normal, and there was no retroperitoneal collection of blood in the vicinity. The pelvis was also normal. There was staining of the mesentery and omentum, but no intramesenteric clots were present. As gross aneurysm appeared to have been excluded attention was again given to the spleen, as the quantity of blood there seemed to be greater than elsewhere. An attempt was made to bring it into the wound for inspection; this was successful, but in doing so an adhesion was torn. The spleen appeared to be normal; there was a tear in the capsule about one inch by one-quarter inch, certainly due to operative trauma. There was no pulping of the spleen or any subcapsular haematoma. As the patient's pulse was becoming very weak the abdomen was closed, a drain being left in. His pulse improved in volume once the abdomen was closed. A transfusion of one pint of citrated blood was given an hour later. After the operation his pulse rose to 150 and his temperature to 102°, and in the first twenty-four hours the pulse dropped to between 120 and 136 the temperature at the same time varying between 99.4° and 101.6°. However, thirty-six hours after the operation his pulse became weaker; he became much more dyspnoeic; and he started vomiting, dying soon after.

PATHOLOGICAL REPORT

At the necropsy the abdomen still contained a considerable amount of blood, with what appeared to be a greater proportion in the splenic region and an accumulation in an inguinal hernia sac. The stomach was dilated, and the small intestine also slightly distended but otherwise normal, as also were the liver, pancreas, kidneys, suprarenals, and bladder. The spleen was normal in size and texture. There were two tears in the capsule, each about one inch by one-quarter inch, which were considered by me to have been secondary to the operative trauma. The abdominal aorta showed only very slight evidence of atheroma. The heart was enlarged. The orifices of the coronary arteries were normal. There was slight blood-staining on the upper surface of the diaphragm. Though the individual splanchnic vessels were not carefully dissected the absence of any retroperitoneal clot was thought to exclude any aneurysmal rupture.

Comments

Cases of massive intraperitoneal haemorrhage in the male in the absence of trauma or gross visceral disease appear to fall into two main groups:

1. An older group of patients, aged 44 to 60, with marked arteriosclerosis and high blood pressure, the haemorrhage coming from a ruptured splanchnic vessel. Six cases have been described which can be included in this category; of these, two were not operated on, being discovered post mortem (Moorehead and McLester, 1936), and four were operated on. In three of the latter (Starcke, 1923; Green and Powers, 1931; Buchbinder and Greene, 1935) the bleeding point was found, the vessel was ligatured, and the patients recovered. In the fourth case (Hilliard, 1918), where no bleeding point was discovered, the patient died.

2. A younger group, in which the vascular system is healthy and no bleeding point is found. Three cases come under this heading: Churchman, 1911—a man aged 48; Hartley and McKechnie, 1934—a man aged 31; and Bruce, 1937—a man aged 34. Of these only the last-named survived laparotomy.

It is suggested (Bruce, 1937) that the haemorrhage in the second group may be due to rupture of a miliary aneurysm or at a junctional area, and some support is given to this by the record of two patients who had a massive intraperitoneal haemorrhage from an aneurysm of a splanchnic vessel in the absence of gross arterial disease in the abdomen (Illingworth, quoted by Bruce (1937), a man of 75 with aneurysmal rupture of the middle colic artery; Budde, 1925, a man of 27 with aneurysmal rupture of the left gastro-epiploic artery).

Though from the clinical and operative findings the case described would be considered to belong to Group 1, it should, I think, be placed in the second group in the absence of any gross disease of the main abdominal blood vessels.

I am indebted to Dr. Hugh Smith for the post-mortem findings.

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Clinical Memoranda

Pseudo-hypoglycaemic Attacks

In view of the anxiety and distress caused to the parents and the physician by the occurrence of hypoglycaemic attacks during the treatment of diabetes by insulin, the following case record has considerable interest and importance. In the first place, it is interesting to find a young patient—and one, be it noted, who never to our knowledge had had a genuine hypoglycaemic attack—simulate this therapeutic accident. He had, however, through association with another patient in whom hypoglycaemic attacks were the great bugbear of her parents, opportunities of learning of such catastrophes, and it is not unlikely that this was the source of his knowledge. The importance of the clinical story is that it reveals how treatment may be unwarrantably interfered with through the administration of the very article of food to which the patient is intolerant and the withholding of the very means by which this intolerance is circumvented. Indeed, in the patient above referred to as being very liable to hypoglycaemic attacks, the fear of such has led to interruption of the treatment and the rapid development of coma on more than one occasion.

CASE REPORT

The patient is a boy, aged 12 years and 9 months, who has been under observation since 1930. A sister is also a diabetic. Both children have been dieted and been given insulin, and have done fairly well. They have been in hospital on many occasions to have the diet regulated, or because of an upset of balance in consequence of a septic focus or some other intercurrent infection. The boy has been a particularly difficult patient. He resents all restrictions, and unfortunately parental discipline is very unsatisfactory.

On March 6, 1937, he was readmitted to hospital in order to start a high carbohydrate diet and for the regulation of the insulin dosage. At first an attempt was made to stabilize him on a diet containing 66.5 grammes protein, 57.5 grammes fat, and 110 grammes carbohydrate per day. This was found very difficult; there was considerable glycosuria and slight acetonuria. Insulin was increased from 14, 14, and 12 to 18, 18, and 16 units before breakfast, dinner, and supper respectively. The boy thought he was being kept in hospital longer than had been promised; he became more and more impatient, and was always asking when he was going home.

March 20.—At 10 p.m.—that is, four hours after his evening dose (14 units) of insulin—he was found by the nurse unconscious, cold, and clammy, with a poor pulse and unable to swallow. He was given immediately 50 c.cm. of normal saline intravenously and 15 grammes of glucose in 2 oz. of orange juice, and by 10.15 p.m. he was quite conscious and seemed better.

March 23.—The diet was changed to 70 grammes protein, 62 grammes fat, and 140 grammes carbohydrate, with 53 units of insulin daily. On this diet there was no acetonuria, but moderate glycosuria before dinner.

March 25.—At 12.6 p.m. he received 18 units of insulin preparatory for the midday meal. Eight minutes later he became drowsy; he refused to eat his dinner. When shaken he drank some orange juice, but he kicked much, and there were peculiar jerking movements of the arms and legs, which suggested to the resident staff a convulsion. Blood was taken for sugar estimation and he was then given 20 c.cm. of a 10 per cent. solution of glucose intravenously and 30 grammes of glucose by mouth. He was quite normal at 5 p.m. The report of the blood examination revealed 0.156 gramme of glucose per c.cm., a finding which at once raised the question of the attack having been psychic in nature.

March 29.—At 12.15 p.m., about three minutes after the injection of insulin, he had another attack similar to the one described above. Blood was again taken for examination and revealed 0.148 gramme of glucose and 10.4 mg. of calcium per 100 c.cm. Nothing at all by way of treatment was given on this occasion, in view of the previous blood finding, and he came round almost at once.

April 1.—About 11 a.m. (last dose of insulin at 8 a.m.) he became drowsy and ultimately would pay no attention to anything. By 12 noon he was apparently unconscious, and neither the midday dose of insulin nor the midday meal was given. I saw him at 2.30 p.m. He was very drowsy. He refused to answer questions or do anything asked of him, but he could easily be roused by pressure behind the angle of the jaw. The pulse was of good volume and numbered 60 per minute. The opinion was expressed at the bedside that he was "putting it on" and that nothing was to be done. He was then left alone. At 3 p.m. he sat up and said that he would like to have his dinner. This was given with the usual dose of insulin. Urine passed just before the meal was yellowish-green to the Benedict test but contained no acetone. He had another attack of drowsiness at 10 p.m. which lasted for ten to fifteen minutes, but no attention was paid to him and he was soon all right.

On the following day the boy was told that he would be allowed home on a certain date and that we only wished to see how he could stand the extra sugar. From then he had no further attacks; he co-operated well and was quite contented The diet was changed to 70 grammes protein, 35 grammes fat, and 200 grammes carbohydrate per day, with 24, 22, and 22 units of insulin before breakfast, dinner, and supper respectively. During the last week of residence there was no glycosuria and no acetonuria, and, as promised, he was discharged on April 26, when he weighed 62¾ lb.

Since dismissal in April he has been on the same diet, and since October on protamine insulin, 30 units a day. He has been well of himself, but there is still irregular glycosuria. There have been no recurrences of the above peculiar pseudo-hypoglycaemic attacks, and on December 2 he weighed 67½ lb.

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Reviews

CONGENITAL DEFORMITIES OF THE EYE

Developmental Abnormalities of the Eye. By Ida Mann, D.Sc., M.B., F.R.C.S. With a foreword by Sir John Herbert Parsons, C.B.E., D.Sc., LL.D., F.R.C.S., F.R.S. (Pp. 444; 284 figures. 50s. net.) Cambridge: The University Press. Published for the *British Journal of Ophthalmology*. 1937.

Not so many years ago every congenital deformity of the eye was regarded as the result of a hypothetical intrauterine inflammation. This conception was itself a reflex of the dominant place that inflammation occupied in general pathology. With fuller appreciation of late years as to the aetiology of disease the multiplicity of factors that may lead to disturbances has come to be recognized, and it is clear that no monistic conception of disease is likely to be valid. Endocrinology, the study of vitamin deficiencies, allergy, and immunity have all affected ophthalmology, but none so markedly as the study of inheritance of disease. Indeed ophthalmology, largely through the pioneer work of Nettleship, was instrumental in guiding other disciplines in this direction.

The modern outlook as applied to maldevelopments of the eye is ably brought out by Miss Ida Mann in her monograph. This is a subject that bristles with difficulties: even the descriptive terms used are exasperating monuments of our ignorance on fundamentals. Such a seemingly innocuous term as "congenital" hides endless difficulties. Chronologically, any injury or disease present in a newborn baby would be regarded as congenital, yet an apparently perfect infant may be the subject of an affection that will make itself manifest later on in life, and which none the less is something that it carried from the days before its birth—retinitis pigmentosa being a case in point. Indeed, birth is itself but a point in a continuous biological development. It is conceivable that a maldevelopment might be due to mechanical interference during foetal and embryonic development, and this has in fact been proved to be the case by experimental embryologists. Yet clinical experience has emphasized the great significance of heredity in many maldevelopments. As it is known that the placenta is not an absolute barrier for the protection of an embryo against noxious substances in the mother's circulation, and that considerable disturbances do occur in the medium in which the embryo grows to natal maturity, the question arises as to how to assess the relative value of these factors on the one hand and of predetermined genetic influences on the other. To that problem no final answer is as yet possible. No balance between genetics and embryology has yet been achieved, and Miss Mann has put ophthalmology under an obligation by her skilful compilation of the clinical data available and her critical review of the likely mechanism in the different groups of maldevelopment.

So much has been achieved by embryologists in the recognition of dissimilar disturbances produced by similar influences at different times in embryonic development that the temptation is strong to see in maldevelopments permanent witnesses of such disturbances at particular times, and to rest on the safe ground of experimental observation.

Miss Mann has written a book with a strong bias in the direction of embryology; the emphasis is not always that which would have been given by other writers, especially geneticists, but the facts are there from which the reader may draw his own conclusions. Those to whom the minutiae of embryology are deep waters will find simple and clear accounts of the clinical aspects of an important branch of ophthalmology. The references, while not exhaustive, are ample and exceedingly helpful. On the scientific side the book is a contribution that is bound to influence the development of British ophthalmology.

DISEASES OF THE EAR, THROAT, AND NOSE

Diseases of the Ear, Throat, and Nose. By J. Douglas McLaggan, M.A., M.B., F.R.C.S.Eng. & Ed. (Pp. 338; 9 plates, 135 illustrations. 15s. net.) London: H. K. Lewis and Co. Ltd. 1937.

Quelques Vérités Premières (Ou Soi-Disant Telles) en Oto-Rhino-Laryngologie. By M. Ombrédanne. (Pp. 86. 24 fr.) Paris: Masson et Cie. 1937.

Under the first title Mr. J. D. McLaggan has contributed a volume to Messrs. Lewis's General Practice Series. The author has chosen his material so as to offer a full account of those simpler methods of examination and treatment of common diseases that may be required daily in general practice. Endoscopic examination and the more elaborate operations are not included, though a few which the general practitioner is not likely to perform are described in some detail. The book may thus be said to achieve the aim of providing an account of everything which the practitioner is likely to undertake, and even a little more: but it fails to give even an outline of all that can be done by the specialist for these patients. The book, as intended, should be helpful in general practice, but is not suitable for house-surgeons or clinical assistants.

Dr. M. Ombrédanne presents in the form of a series of aphorisms a complete exposition of the principles upon which the practice of otology and laryngology is based. In a book of fewer than ninety pages he tells in laconic sentences all that a beginner needs to know in order to obtain a comprehensive grasp of the subject. There are neither illustrations nor superfluous words, and we are shown how much information can be packed into a little space without making it unreadable. Nor are a few flashes of worldly wisdom lacking. This is written of the removal of wax from the ear: "Si c'est une femme coquette à qui vous avez rendu ce service, laissez-la réjouir du resultat obtenu. Mais ne lui montrez pas le corps du délit; elle vous en voudrait mortellement de vous être permis de supposer qu'elle avait les oreilles sales!" This book is warmly recommended.

COMMON NEUROSES

Common Neuroses of Children and Adults. By O. Spurgeon English, M.D., and Gerald H. J. Pearson, B.A., M.D. (Pp. 320. 12s. 6d. net.) London: George Allen and Unwin Ltd. 1937.

The very multiplicity of books which seek to expound Freudian doctrines to the general practitioner and the medical student shows how difficult is this task. Each author is dissatisfied with the attempts of his predecessors, and full of enthusiasm embarks on the hopeless task himself. In such books the table of contents is always promising, and the one under notice is no exception. Part I covers the structure of the personality, normal development, and the factors which interfere with this and the method of symptom formation. Part II is devoted to the common neuroses of childhood, comprising vegetative and motor and sensory disturbances, social maladjustments, delinquencies, etc. In Part III the common neuroses of adults are discussed under the

conventional headings of neurasthenia, hysteria, anxiety, compulsions, etc. But when we turn to such a common perplexity to the general practitioner as stammering, what do we find? "In the unconscious of many stammerers the whole body represented a penis and the mouth represented the opening of the urethra and anus. Consequently, as Fenichel says, 'The fundamental pleasure in stuttering is that of playing with words which analysis has found repeatedly to be a continuation of infantile playing with faeces, displaced from below upwards—the words being held back as faeces were held back in infancy to produce an auto-erotic pleasure.'" Again, "speech is closely related to the anal-sadistic stage of development. It is found that stutterers have been children who were very difficult to train in toilet habits or whose training itself was over-severe." Or again, in relation to the other bugbear of practice, enuresis, the enuresis of the small girl is attributed to the thwarted desire to be impregnated by the father, and the revenge is taken by the production of "a urinary baby." In both these conditions the authors admit the value of retraining, but hold that the disclosure of the hidden motives such as the above by psycho-analysis is by far the most valuable and useful line of treatment.

It is possible that these conceptions of infantile sexuality may be useful to those who, having made a life-study of the subject, thoroughly understand the genesis, development, and application of the concepts, but we cannot imagine that the general practitioner or the medical student is going to get much help or advantage from a short and rather superficial exposition of them. We would advise those who are interested in "Freudian psychology" to submit themselves to the discipline of a complete study of the subject, and unless they are prepared to undertake that task it is unlikely that this or other similar books will do anything but mystify and mislead them.

THE UROLOGY OF CHILDHOOD

Pedriatic Urology. By Meredith F. Campbell, M.S., M.D., F.A.C.S. With a Section on *Bright's Disease in Infancy and Childhood* by John D. Lyttle, A.B., M.D. (Vol. i, pp. 570; Vol. ii, pp. 540; 610 figures, 2 coloured plates. £3 3s.) New York: The Macmillan Company. 1937.

Recent years have seen a greatly increased interest in the genito-urinary tract of children and its disorders, partly due to the ingenuity of the surgical instrument manufacturers, and the time is ripe for a comprehensive textbook on the subject. Few if any specialists in this branch of surgery are better qualified than Professor Meredith F. Campbell to write such a book, and his *Pedriatic Urology* will be welcomed by all those, physicians and surgeons alike, who deal with sick children. The work is divided into two volumes (each with an index covering both), and there are over 1,350 illustrations, including two coloured plates. In the first volume Professor Campbell discusses methods of examination and diagnosis, and there is also a long chapter on the anatomy, physiology, embryology, and anomalies of the urogenital tract. The other two chapters in this part are concerned with obstructions of the urinary tract and with urinary infections. The second volume contains chapters on diseases of the genital organs, injuries, calculus, tumours, enuresis, and the special surgery of the genito-urinary tract in childhood. Dr. John D. Lyttle contributes a valuable account of Bright's disease in infancy and childhood—for Professor Campbell holds that the urologist should be as conversant with medical as with surgical diseases of the kidney. There is also an interesting chapter on disorders of the neuro-muscular mechanisms of the urinary tract.

The first impression of these two beautifully produced volumes is that the author has performed his task in a thorough manner. He explains in a preface that it has taken ten years to do this, and the extensive bibliographies given at the end of each chapter indicate that he has drawn not only on his own extensive experience but also upon the experiences of others in a vast and increasing volume of literature. Random sampling of sections likely to contain controversial matter provides evidence of a balanced judgment, and opposing views are fairly quoted and criticized. Professor Campbell is perhaps pessimistic when he states that "about half of all children suffer from a form of urologic disturbance before they reach puberty." Even, however, if such a statement is somewhat exaggerated, paediatricians are likely to encounter in their daily practice many of the disorders described in this monograph, and it is probable that these volumes will afford great help to them in arriving at a full understanding of this branch of their work.

LOCAL IMMUNITY

Les Immunités Locales. By A. Besredka. (Pp. 224; 35 fr.) Paris: Masson et Cie. 1937.

Professor Besredka's original book on local immunity is out of print. He has now written a new book on the subject, including much recent material. A large part of this is made up of records of successful applications of local immunization, with vaccines or antivirus, both among animals and man. Among the most striking examples are those of oral immunization against typhoid fever. There is little reference to adverse criticism or unsuccessful experiences. In places Professor Besredka wanders away from local immunization and discusses the superiority of intradermal inoculation as a method of producing general immunity. He also discusses the advantages of injecting antisera near the site of invasion, when passive immunization is employed.

It seems that local immunity can appear in the absence of circulating antibodies. The whole question is therefore wrapped up with that of cellular immunity. Professor Besredka gives a short account of experiments showing the development of immunity in plants, in which the action of circulating antibodies can hardly be invoked.

A GUIDE TO GYNAECOLOGICAL AND OBSTETRIC NURSING

Obstetric and Gynecologic Nursing. By Frederick H. Falls, M.S., M.D., F.A.C.S., and Jane R. McLaughlin, B.A., R.N. (Pp. 492; 83 figures. 12s. 6d. net.) London: Henry Kimpton. 1937.

One of the great faults inherent in the modern method of nursing instruction is that so much attention is directed to purely theoretical subjects that actual nursing technique is reduced to a minimum. It is no doubt essential that the pupil should have a knowledge of the fundamentals of anatomy and physiology, but the tendency to treat her as a kind of second-rate medical student must inevitably detract from her efficiency. This tendency is well shown in the contents of many textbooks and examination papers, some of which imply a standard of medical knowledge at once unnecessary and unattainable. It is for this reason that the latest addition to the literature on the subject is particularly welcome, for while much information of a purely medical character is included, it is given simply and succinctly, and is used mainly as

a necessary basis for the more practical description of the various treatments involved.

Written jointly by the medical and nursing directors of a large obstetric and gynaecological department, the book is devised more particularly for qualified nurses practising in these subjects, and is meant to supplement rather than to replace the more standard works. Most of the methods described are those employed in English hospitals, though exception might be taken to the routine use of lysol, the administration of pituitrin for retained placenta, and the somewhat violent technique for the resuscitation of babies. The purely medical opinions expressed are also mainly orthodox, though there are some notable omissions—for example, the mandelic acid treatment of pyelitis, the importance of insomnia in pregnancy toxaemia, and the prevention of spread of puerperal sepsis. It is also stated that one-child sterility is due to gonorrhoea, that amenorrhoea is rare in ectopic gestation, and that syphilis is a common complication of pregnancy. But apart from these points, and inevitable Americanisms like "hypodermoclysis," "eclamptogenic," "gavage," etc., the book is a valuable contribution to specialized nursing, and should be studied by all those engaged in its practice.

Notes on Books

It is thirteen years since Dr. LOGAN CLENDENING, clinical professor of medicine in the University of Kansas, brought out *Methods of Treatment*, which contains chapters on special subjects by ten collaborators; and that the book is now in its sixth edition (Kimpton, 42s.) is eloquent evidence that it meets a definite demand. The revision has brought the text into conformity with the eleventh edition of the *United States Pharmacopoeia*; the author has departed from his conservative view about the use of artificial pneumothorax, and in the rewritten chapter expresses agreement with the general opinion. Other changes and additions have been duly made.

In his *Short Dictionary of the History of Medicine* (Jena: Gustav Fischer, 1937, RM. 9, paper; bound, 10.50) Professor B. MAYRHOFER, head of the Museum of the History of Medicine and formerly rector of the University of Innsbruck, has compiled an excellent work of reference which will be of value not only to the medical historian but also to the practitioner who can read German and takes an intelligent interest in the history of his profession. Within the short space of 224 pages Professor Mayrhofer has accumulated an immense amount of interesting information, including short biographies of eminent doctors and men of science, and a brief description of the most important diseases, drugs, operations, and schools of medicine in all ages. Errors are few and comparatively trivial, such as the omission of Klebs in the mention of the diphtheria bacillus, the attribution of the death of John Howard, the prison reformer, to plague instead of to "camp fever," as typhus was then called, the addition of a superfluous terminal "n" to the name of Sir William Bowman, the substitution of "Paul" for Pierre as the Christian name of Bretonneau, and the date of birth of Sir Frederick Banting as 1991.

In a pamphlet entitled *Prejudicial Assumptions in Poison Cases* (Westhope and Co., 6d.) Miss ALICE RAVEN, barrister-at-law, declares that juries in our criminal courts of assize habitually adopt a prejudiced attitude towards accusations of murder by arsenic. They assume without sufficient evidence, she says, that a lethal dose of arsenic is the cause of death; that previous gastro-intestinal trouble is due to arsenic; that arsenic found in the body was criminally administered; that it was given by the person with the best opportunity; and that to such a person any benefit accruing from the death is a sufficient motive. She supports these criticisms with an analysis of the Maybrick and the Bryant cases. It is a little surprising to learn that the judges of the King's Bench, whose duty it is to direct juries and later to correct their mistakes on appeal, have these serious blind spots in their otherwise admittedly keen and well-trained eyes. No doubt they will be grateful to Miss Raven for pointing out their shortcomings, and think themselves fortunate in having a critic so free from their disadvantages of training and experience.

The Rickman Godlee Lecture, *The Price of Progress*, delivered by the Very Rev. W. R. INGE at University College, London, on November 22, 1937, is now published, and may be obtained on application, enclosing postal order, to the secretary, University College, Gower Street, W.C.1. (Price 1s., post free 1s. 2d.)

H.M. Stationery Office has issued in pamphlet form abstracts of the official papers, numbering 140, published from the National Physical Laboratory in the scientific and technical press during the year 1936. It is the first of a series which will be continued annually. The purpose of the abstracts is to provide a concise summary of the completed work of the laboratory, supplementing the information given in the annual reports. An author index and a subject index are included. The price is 1s.

Preparations and Appliances

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"Nestrovite" (Roche Products Ltd.) is a preparation of vitamins issued as emulsion and as tablets. It is the result of prolonged researches undertaken with the aim of providing the four indispensable vitamins (A, B_1, C, and D) in a form both pleasant to take and medicinally reliable. One teaspoonful of "nestrovite" emulsion contains the following vitamin content as measured in international units: vitamin A, 5,000; vitamin B_1, 42; vitamin C, 135; and vitamin D, 500. A single tablet contains about one and a half times each of these amounts. These quantities are approximately equivalent to one teaspoonful of cod-liver oil, two teaspoonfuls of orange juice, plus an adequate daily dosage of vitamin B_1.

Both preparations are very palatable and provide a simple method of ensuring an adequate supply of all the essential vitamins. The prices are: 3s. 3d. for a 4½-oz. bottle of emulsion and 14s. for 100 tablets. The marketing at this price of a preparation containing four vitamins in a purified form is striking evidence of the rate at which vitamin chemistry has advanced in recent years.

CALCIUM MANDELATE

Calcium mandelate (Burroughs Wellcome and Co.) is stated to be entirely free from the unpleasant taste which characterizes the soluble salts of mandelic acid (that is, sodium or ammonium mandelate). The mandelic acid is absorbed but not the calcium, and hence the degree of urinary acidity produced is equal to that produced by ammonium mandelate and superior to that produced by sodium mandelate. The manufacturers claim that the compound makes effective mandelic acid treatment possible without the setting up of digestive disturbances. The normal adult dose recommended is 4.4 grammes of the powder, which is equivalent to 3 grammes of mandelic acid.

CAPSULES FOR FURUNCULOSIS

"Glesol" capsules (prepared by the French house of Couturieux, Paris, and marketed in this country by Savory and Moore Ltd.) are stated to contain a yeast extract, colloidal tin, colloidal sulphur, lactic ferments, and a gluten coating. They are recommended for furunculosis and other staphylococcal infections.

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OXYGEN WANT AND OXYGEN THERAPY

During the past fifteen years our knowledge of anoxia (oxygen want) and oxygen therapy has been extended and clarified in many directions. Two concise reviews in book form have been published within the past few years. The first of these was written by two researchers in this country.[1] The second review, which is French, appeared quite recently, the author being Dr. L. Dautrebande, professor in the faculty of medicine, Liége.[2] Very fittingly he has dedicated his volume to the late J. S. Haldane, the leading authority of modern times in the study of respiration. A third volume[3] which touches on parts of these subjects has been reviewed in this *Journal* (October 30, 1937, p. 854).

Although a great deal of information was to hand, from the Haldane and Barcroft schools of research, regarding the effects of oxygen want on respiration and blood gases respectively, what was actually happening in the cells and tissues was not so clear. This required more direct study of gas pressures in the tissues themselves.[4] Normally in the resting subject the oxygen pressure in the extracellular fluids—for example, serous fluid, lymph, urine—and probably in the cells themselves, is certainly not zero, but varies for different regions between 20 and 40 mm. Hg, or 3 to 6 per cent. atmosphere, while the carbon dioxide pressures are about 40 to 60 mm. Hg, or 6 to 8 per cent. As might be expected, these figures, which apply to man and all laboratory mammals tested, resemble the pressures usually given for gases in venous blood. Effects of oxygen want and oxygen therapy upon tissue gas pressures may be easily tested with experimental animals. Thus acute oxygen want, apart from the histotoxic variety—for example, poisoning with cyanide, which affects the ferment system—always lowers the oxygen pressures in the tissues considerably, and if the fall is much below 40 per cent. of the normal death results. Life is not possible with a tissue oxygen pressure in general anywhere near zero. Locally a zero oxygen pressure is approached only where there is pus, necrosis, and stasis of circulation—for example, in pyopneumothorax or in the large intestine with food present and fermentation proceeding.

As regards acclimatization to the more severe degrees of oxygen want, the oxygen pressure in the tissues is not raised to normal again even when there is increase both in volume breathed and in red cell count. Such increases seem to be used not to raise the tissue oxygen pressure to normal again but to relieve the work of the heart that is to limit the minute output. Acclimatization is due to the vital organs becoming accustomed to function under the lowered tissue oxygen pressure. Possibly there are changes in the cells concerning such substances as the glutathione of Sir Frederick Gowland Hopkins and the reactions described by Professors Warburg and Keilin. Oxygen secretion, if it does occur in the lungs, is—like any other factor in the body—not capable of keeping the oxygen pressure in the tissues at a normal level during severe degrees of oxygen want. Another important result is that administration of oxygen—even in only double the normal (21) percentage—definitely raises the oxygen pressure in the tissues in a normal animal. This affords the scientific basis for oxygen therapy.

Concerning the powers of endurance, it is found[5] that mammals cannot live continuously in regions where there is only 10 per cent. or less of oxygen in the atmosphere; this is equivalent to an altitude of about 20,000 feet. Such degrees of oxygen want cause atrophy, degeneration, and even necrosis in the liver, heart, brain, and other organs.[1 2 5 6] This limit of 10 per cent. was first established with laboratory mammals, and has recently been confirmed for a highly selected community in the South American Andes, as recorded by Dr. Ross McFarland.[7] Some sulphur miners there work at a slow pace at 19,000 feet, but find that they cannot continue in health if they sleep and live continuously above 17,500 feet. Their camp at 17,500 feet is claimed to be the highest permanent village in existence. The miners descend to 12,000 feet for a proper game of football and also send their wives to this level for confinement, though fertility appears to be maintained at 17,500 feet, where the arterial blood saturation with oxygen is about three-quarters of normal. It is obvious that the Everest climbers should not spend too long camping above 18,000 feet. Some of these climbers, like the experimental animals, have exhibited some *temporary* resistance, but, since at 27,000 to 28,000 feet the climbers are reported to have suffered from delusions and to require ten breaths for each step forward, oxygen should be at

[1] Campbell, Argyll, and Poulton, E. P. (1934). *Oxygen and Carbon Dioxide Therapy*, London.
[2] Dautrebande, L. (1937). *Oxygénothérapie et Carbothérapie*, Masson, Paris. (55 fr.)
[3] Loewy, A., and Wittkower, E. (1937). *The Pathology of High Altitude Climate*, London.
[4] Campbell, Argyll (1931). *Physiol. Rev.*, **11**, 1
[5] Campbell, Argyll (1935). *Brit. J. exp. Path.*, **16**, 39.
[6] Büchner, F. (1937). *Klin. Wschr.*, **16**, 1409.
[7] McFarland, Ross A. (1937). *J. comp. Psychol.*, **24**, 189.

hand to prevent further calamity in these very high regions.

That mammals cannot live continuously in an atmosphere containing only 10 per cent. of oxygen leads to interesting conjectures. Some authorities hold that at one early period of the earth's existence there was no free oxygen in its atmosphere and life was anaerobic; the oxygen now present was freed, under the influence of the sun, by that green plant life which laid down enormous deposits of coal. Dr. W. M. Clark, who has carried out important researches on oxidation-reduction potential, considers that oxygen is a scavenger clearing up the waste products of cell metabolism by combustion. From the above it might be tentatively suggested that when mammals were first sprouting from the tree of life the oxygen present in the surrounding atmosphere had risen above 10 per cent., and that is why mammals cannot now become acclimatized to lower oxygen pressures. When the condition of a patient with oxygen want resembles that of an individual forced to breathe less than 10 per cent. of oxygen continuously recovery is impossible.

Turning to modern oxygen therapy, the late J. S. Haldane and others—including Professor Dautrebande[2]—have much improved the mask method employed by Beddoes (1760–1808) at Bristol; he and Chaussier (1780) appear to be among the first to administer oxygen to patients.[1] Some of the present forms of mask apparatus are too heavy for weak patients but are inexpensive to run and of service for the stronger patients. Sir Leonard Hill introduced the recent chamber and tent methods, but the first comfortable chamber was that of Sir Joseph Barcroft at Cambridge, while tents have been much improved by Dr. A. L. Barach and others. The chamber, or room, methods are the most comfortable, but running expenses are high. Even the simplest tents—for example, the Guy's Hospital tent and the open-top tent of St. George's Hospital in this country—though cheaper than oxygen chambers, cost up to about thirty to forty shillings a day to run, and often demand constant skilled attention. Still cheaper and simpler methods for nurses are the twin catheter method, the forked nasal tube, and the box mask or face tent; the nasal methods cannot be used with blocked nasal passages. Sir Arthur MacNalty includes the references and gives the most recent comparison of all these methods in his annual report (1936) to the Minister of Health. Tents seem valuable for children and for the more restless patients.

Oxygen therapy should of course be used in all cases of excessive dyspnoea and asphyxia as emergency treatment. Also in diseases with cardio-respiratory embarrassment it may certainly keep a patient alive and enable other therapy—for example, serum in pneumonia—and natural processes to produce a favourable result. Pneumonia, the disease most frequently treated with the aid of oxygen, is responsible for about 500,000 patients, with 100,000 deaths, a year in the United States, where much research is being directed towards reducing this incidence and mortality. With less than half the population of the United States, England and Wales (1936) had 46,000 cases, with over 30,000 deaths. The value of early treatment with oxygen—within the first six hours of onset—in lessening serious complications seems to have been proved in America. Pure oxygen should be used for short periods only—a few hours—the limit recommended for prolonged treatment being 60 per cent., since with higher percentages the late Lorrain Smith found evidence of damage to lung tissue.

Professor Yandell Henderson's advocacy of carbon dioxide as a respiratory stimulant is justified; for carbon monoxide poisoning 7 per cent. carbon dioxide with 93 per cent. oxygen gives the best results, according to a prolonged test in the New York emergency service. In anaesthesia and asphyxia neonatorum 5 per cent. carbon dioxide with 95 per cent. oxygen is useful. Dame Louise McIlroy's apparatus is simple and efficient with the newborn. Artificial respiration is often used in conjunction with oxygen therapy; the Sharpey-Schafer method is still the simplest and most efficient for general purposes, and there is also the recent rocking method of Dr. Eve. The Bragg-Paul pulsator for rhythmical compression of the chest is simple and useful for prolonged periods: it kept a patient with progressive muscular atrophy alive for some years. The Drinker apparatus, although complicated, is perhaps the most physiological, and has been much used in respiratory paralysis. Some recent and fairly full data[3] seem to show that with this Drinker treatment only about 10 per cent. of the cases with bulbar respiratory paralysis *eventually* recovered, as did about 30 per cent. of the cases with spinal respiratory paralysis; nevertheless the *immediate* and dramatic value of the apparatus is obvious.

LATERAL CURVATURE

If some inquisitive wag circularized the orthopaedic surgeons of this country and asked them—confidentially—what condition baffled, bored, and irritated them more than any other it is probable that most of them would unhesitatingly answer scoliosis. The causes of structural lateral curvature of the spine are for the most part unknown, and

[3] Current comment (1937). *J. Amer. med. Ass.*, **109**, 1130.

the treatment is unsatisfactory, or at best uncertain. There are a few obvious causes, such as congenital maldevelopment of the vertebrae, nervous diseases—of which poliomyelitis is the most important—intrathoracic disease—generally empyema—and rarities such as von Recklinghausen's disease. But when all these have been eliminated we are left with a substantial majority in which no obvious cause is present. An immense amount of energy has been expended in trying to explain these "idiopathic" cases. Yet so far no theory, let alone scientific proof, of the causation of lateral curvature has managed to command wide acceptance. It is best to be honest and admit that we do not know. The circumstances attending the appearance of this sinister curvature, which may progress until the patient is hideously deformed, are well known. Girls are affected more often than boys, and the trouble generally begins during the years of puberty—though it may appear any time during childhood. Postural curves, antero-posterior and lateral, develop during the same period, but they are unaccompanied by the structural changes, of which wedging of the vertebral bodies is the most obvious, so characteristic of scoliosis.

Two obvious lines of investigation suggest themselves. Can we find evidence of some obscure bone malacia which causes the spine to buckle under the severe and constantly changing stresses of the growth period? The answer so far has been in the negative, and it is significant that rickets, about which we know a great deal, does not cause scoliosis, unless the disease is of unusual severity. Can we, on the other hand, find a neurological condition which will upset the delicate balance of the muscles controlling the spine? Poliomyelitis comes to mind immediately, and must not be lightly dismissed. We are all familiar with the case of unilateral pes cavus, sometimes accompanied by a little shortening of the affected limb, insidious in onset, and dating from nothing in particular. It is reasonable to suppose that this deformity is the result of poliomyelitis, which was so mild in its acute phase as to escape attention. There are cases in which the abdominal muscles, and apparently no others, have been similarly affected, and a scoliosis has resulted. It is just possible that many "idiopathic" curves are due to the same condition in more deeply situated muscles for which at present there are no satisfactory methods of examination. During the past summer we have been reminded of the ubiquity of the poliomyelitis virus in this country, and it is possible that one of its more remote crimes is the production of lateral curvature of the spine; this line may be worth following.

But why girls rather than boys? On another page Dr. R. G. Abercrombie has advanced a hypothesis which postulates abnormality in an entirely different sphere. He suggests that the trouble is psychological—due to what he calls "bashfulness." There is no doubt that girls at puberty often become "all girlish" and that they are acutely conscious of changes in their physical condition. It has often been noticed that they try to hide the most obvious change by assuming a hunched-up (kyphotic) attitude, and that explanation and reassurance rather than exercises will generally cure the condition. Yet it is hard to believe that faulty posture due to excessive bashfulness can lead to the development of serious structural changes, often the beginning of a lifetime of trouble. This new approach is interesting, perhaps valuable; but we would like to see more evidence, properly documented. Has Dr. Abercrombie got a definition and standard of bashfulness? Is there any hope of independent observers agreeing on their findings after examination of the same series of children? How many bashful children fail to develop scoliosis, and what about bashfulness in boys? Mr. Philip Wiles[1] has recently investigated postural antero-posterior curvatures in adolescents. He found a psychological element among the responsible factors, but he also found an organic abnormality (pelvic inclination) of even greater importance. How much more, then, are we likely to find an organic cause for the serious organic derangement so typical of scoliosis, but perhaps with psychological disturbances as a contributory factor!

ANTI-SCARLATINAL SERUM IN ACUTE RHEUMATISM

The relation of haemolytic streptococcal infections of the throat to acute rheumatic fever has been demonstrated in a convincing manner during the past few years, and this, coupled with a growing dissatisfaction with the immediate and remote results of the use of salicylates, has led J. Eason and G. Carpenter[2] to study the action of anti-scarlatinal serum in rheumatic polyarthritis and chorea. Their communication deals in detail with just under fifty cases, and the results may be fairly described as encouraging. A stock concentrated anti-scarlatinal serum supplied by Parke, Davis and Co. has been used throughout, all patients being tested first for serum sensitivity. Non-sensitive patients received 30 c.cm. of serum intramuscularly, and this was repeated in thirty-six hours. Sensitive patients were desensitized and the full dose given gradually. There were some departures from this programme—for example, in the case of patients too ill with carditis to receive the full 30 c.cm. at once. Thirteen cases of

[1] *Lancet*, April 17, 1937, p. 911.
[2] *Quart. J. Med.*, 1937, **6**, 93.

rheumatic polyarthritis were treated with serum alone and no relapses occurred. In a second group salicylates were also employed at some time, and in assessing the value of the results special attention was paid to the following: (1) duration of pain and fever; (2) relapse rate; (3) average duration of confinement to bed and to hospital; (4) course of convalescence; and (5) incidence of sequelae. Serum was less efficient than salicylates in securing an afebrile condition, but this was to be expected, and it is interesting that after twenty days all the serum-treated cases were afebrile, whereas about 87 per cent. of untreated cases still showed fever. There were only four cases of true relapse following one course of serum, and the average duration of confinement to bed and hospital, admittedly a fallacious source of information, was forty-two days. The authors wisely refrain from comparing this with the results of other methods of treatment. They believe that the course of convalescence is much more rapid after serum treatment than when salicylates are given; they do not intend at the moment to comment on the incidence of sequelae. There were no untoward results in the patients treated, and while urging that serum therapy should only be carried out in hospital or in equivalent conditions in private practice, they believe that its dangers have been exaggerated. The injections cause a certain amount of local pain, there was an immediate exacerbation of the fever, and about 75 per cent. of the patients developed a mild serum rash. There was one serious reaction: a patient with definite evidence of heart disease developed what may be regarded as a "focal" reaction. The authors suggest that this may be avoided and the serum given even to very ill patients with grave carditis, provided gradually increasing daily doses are used instead of the two ordinary doses in the course. In discussing the effects of the anti-scarlatinal serum it is suggested that some of these may be due to a non-specific action. Three cases of acute rheumatic polyarthritis were given concentrated horse serum containing an equivalent amount of pseudo-globulin. These three cases all showed at least one relapse, so possibly it is the combination of a non-specific element and a specific element in the anti-scarlatinal serum which produces the satisfactory results reported.

CULTURE, COSMETICS, AND MEDICINE

Dr. J. P. Montgomery, in an opening address delivered at the medical school of the Royal Victoria Hospital, Belfast,[1] proved that the humanities are still studied by some members of the medical profession. He called his address "Some Aspects of Medicine and Literature," quoting translations from the Greek anthology made by Dr. J. D. Rolleston and from Martial's epigrams in verse by Sir Raymond Crawfurd. Dr. Montgomery's survey extends from classical times to those of Clifford Allbutt and William Osler. How little things have changed with the years is shown by the jokes on the *saeva noverca* and the satires on the painting of faces. The Greek anthology tells of a young man who hung a garland on the column at his stepmother's tomb, thinking that death might have changed her feelings towards him. The column fell and killed him. "Children," says the anthologist, "beware even of the grave of a stepmother." Speaking of the use of cosmetics by the ladies of his day, Lucian says, "Countless drugs are used to doctor their wretched faces. They mix numerous pastes to give a lustre to their disagreeable skins. Some dye their hair like wool, others with colours as bright as the sun at noonday. Those who think that dark hair becomes them best spend their husband's money in scenting themselves with Arabian perfumes. They shamelessly paint their cheeks with bright colours on purpose to show up the excessive pallor of their skin." And so Dr. Montgomery continues his lively paper throughout the ages, giving quotation after quotation with chapter and verse appended until he comes to Dickens and to George Eliot, one of whose characters (Lady Chettam in *Middlemarch*) was assuredly no lover of the highly educated doctor, for she said: "I like a medical man more on a footing with the servants."

[1] *Ulster Medical Journal*, January, 1938.

THE HEDJAZ PILGRIMAGE

The latest report of the Egyptian Maritime and Quarantine Sanitary Council[1] is the tenth of the series which is annually presented to the Permanent Committee of International Public Health at Paris and to the health authorities of all the countries interested in the pilgrimage to the holy cities of Medina and Mecca. The religious ceremonies, which began on February 20, were attended by about 100,000 worshippers, and there was an increase from 1936 in the number of pilgrims; in the case of those coming from the north it amounted to 60 per cent. The general health was very satisfactory, and the council was able to certify the pilgrimage as having a clean bill of health because of the absence of infectious diseases. As the season for worship advances each year by eleven days it now coincides with a cooler temperature, which accounts for the infrequency of intestinal troubles. In 1936 only a few pilgrims travelled from Jeddah to Medina by air, but this year 105 came by aeroplane, and there are indications that this mode of transport is going to be much more popular in future. Three classes take part in the pilgrimage: (*a*) Egyptian pilgrims, (*b*) foreign pilgrims coming via Alexandria, Port Said, and Kantara, and (*c*) those arriving in steamships by the Suez Canal. All of them have had to submit to variolar vaccination and double inoculations against cholera and typhoid fever. The epidemiology of the countries of origin is studied by the Regional Bureau of Sanitary Inspection for the Near East, and the council is thus made aware of possible sources of infection. By means of international sanitary measures carried out in close co-operation it is not now possible for a pilgrim to obtain a passport unless he is in possession of a medical certificate from recognised doctors stating that he is free of disease. Pilgrim ships, before being chartered for the voyage, are sub-

[1] *Rapport sur le Pèlerinage du Hedjaz*, 1937. Conseil Sanitaire Maritime et Quarantenaire d'Égypte. Alexandrie: Société de Publications Égyptiennes.

mitted to a rigorous inspection, and a long questionary, dealing with the structure of the vessel, accommodation, food, water supply, sanitation, and deratization, has to be answered. Pilgrims are not allowed, as formerly, to bring their own food and individually prepare it: loud speakers inform them when meals are ready for being eaten under sanitary conditions. Medical surveillance is maintained throughout the voyage. Ample arrangements for camp hygiene are made. Improved water supply and drainage, installation of electric lighting, refuse destructors, disinfectors, clean kitchens and bedding all have the effect of keeping the general health good. Some 16,700 pilgrims passed through the quarantine camp at Tor, where examinations of stools, blood, and sputum of any suspected cases were undertaken. These measures found the pilgrims appreciative of all the efforts made for them. A programme of steady improvement in the encampments during the past ten years has thus been rewarded by excellent health conditions among these thousands of more or less irresponsible devotees who congregate at the two holy cities. These annual printed reports form a useful record for reference in the management of mass movements of people under tropical hygienic superintendence.

EMANUEL SWEDENBORG

On January 29 the 250th anniversary of Emanuel Swedenborg's birth will be commemorated by a meeting to be held in the Queen's Hall, London, under the chairmanship of the Swedish Minister, Baron Palmstierna. A many-sided genius who, like Aristotle, Leonardo da Vinci, Goethe, and Thomas Young, took all knowledge for his province, Swedenborg was a physicist, mathematician, chemist, physiologist, astronomer, geologist, philosopher, poet, and theologian. He designed a submarine to attack ships under water, sketched a flying machine, manufactured lenses, designed an ear-trumpet, invented a new stove, was a skilful engraver and bookbinder, and an active reformer in the House of Nobles. Though he understood the anatomy and physiology of the spinal cord better than his contemporaries, it was the physiology of the brain which particularly fascinated him because he was searching for the seat of the soul. Psychical activity he believed to reside in the smallest cortical elements hanging at the ends of nerves (nerve cells), different departments of activity being localized in different parts of the cerebral cortex. He further localized the motor centres in the cortex and knew of the relation between the corpora quadrigemina and the movements of the eyes. At a time when methods of investigation were few and imperfect he was interested in the ductless glands, and his constructive imagination anticipated many later discoveries. Appointed assessor of the Royal College of Mines in 1716, Swedenborg held this post until 1747, when he decided to devote his life to the contemplation of spiritual matters. He died in 1772. The first of the English Swedenborg Societies was founded in London four years after his death and became afterwards known as the "London Universal Society for the Promotion of the New Jerusalem Church." The present Swedenborg Society was established in 1810. First and rare editions of his works and reproductions of his manuscripts may be seen at Swedenborg House, 20, Hart Street, W.C.1. His original manuscripts are preserved in the Royal Swedish Academy of Sciences and in other Swedish libraries.

TUBERCULOUS TRACHEOBRONCHITIS

Cases of tuberculous tracheobronchitis associated with pulmonary tuberculosis have often been reported in the past, and stenotic lesions have been described fully by Eloesser, Haslinger, and Jackson. But the clinical recognition of the earlier manifestations of tuberculous tracheobronchitis and the importance of its occurrence as a complication of parenchymal tuberculosis have been neglected, though the condition is not rare and is of significance in regard to both treatment and prognosis. Three papers have recently been published on this subject, however, from the medical school of the University of Michigan. The attention of the tuberculosis unit had been drawn to a group of patients who developed dyspnoea, wheezing respiration, cyanosis, and intractable cough in the course of pulmonary tuberculosis, these symptoms appearing in some cases when the pulmonary lesions had been regressing satisfactorily. The patients did not respond well to any type of collapse therapy, and 47 per cent. died within a year of the establishment of a diagnosis of tracheobronchial ulceration or stenosis. Bugher, Littig, and Culp[1] have based their pathological study of this condition on 122 necropsies; in every case tuberculosis was the primary cause of death. No less than 41 per cent. of these cases showed lesions in either the trachea or the main bronchi, or both, due to direct contact with sputum containing tubercle bacilli, which gained entrance through the epithelium or through the ducts of the mucous glands, except in some cases in which the main bronchi were affected by direct extension from the peribronchial lesions; this last mechanism was even more important in the intrapulmonary bronchial branches. Tuberculous tracheobronchitis was more frequent in patients with long-standing pulmonary tuberculosis, and although the larynx also was often affected there was no direct relation between the two conditions. Involvement of the tracheobronchial mucosa when it occurred tended to be widespread and most pronounced along the posterior wall. The authors found no definite evidence of healing in any of the ulcers examined, and no presumptive evidence that primary tracheal tuberculosis ever occurs. Samson[2] describes the characteristic symptoms, stressing particularly the wheezing and rattling, asthma-like attacks in which the difficulty is in inspiration, and paroxysms of coughing. Important physical signs are localized, persistent, audible, and palpable parasternal rhonchi, and the evidence of scattered areas of atelectasis. The diagnosis can usually be made clinically but must be confirmed or refuted by bronchoscopy; gentle manipulation is essential, and the removal of material

[1] *Amer. J. med. Sci.*, 1937, **193**, 515.
[2] *J. Thorac. Surg.*, 1937, **6**, 561.

for biopsy is unjustified, since it may lead to a spread of the parenchymatous disease. Four types of lesion can be differentiated: non-ulcerative and non-stenotic, hyperplastic, ulcerative, and fibrostenotic, though in each type the symptoms must be due to some reduction of the bronchial or tracheal lumen. For this reason healing may not necessarily be beneficial, and perhaps this accounts for the fact that "in general the results with regard to the tracheobronchial lesions have been equally poor whether the patient was treated by bed rest only or by collapse therapy, and whether the designated treatment was instituted before or after the appearance of the symptoms of tracheobronchial disease." In only the first type of lesion, therefore, should a patient be given collapse treatment. In the third paper of this series, Barnwell, Littig, and Culp[1] suggest that ulcerative tuberculous tracheobronchitis is a possible and, in fact, probable cause of obstructive atelectasis, the tendency to which is increased by collapse measures. It is also a probable source of the tubercle bacilli found in the sputum of patients with little radiological evidence of pulmonary tuberculosis, and patients with adequate collapse of the lung. It is easy to understand why these lesions are not affected by collapse therapy, which shortens but does not collapse the rigid bronchi; the symptoms may disappear, however, when bronchial obstruction is produced. Collapse therapy is justifiable only when the pulmonary lesion itself is likely to lead to early death. Tuberculous tracheobronchitis is not merely a clinical curiosity, but a syndrome of practical importance in diagnosis, prognosis, and treatment. It may explain the persistence of tubercle bacilli in the sputum in certain cases and the occurrence of atelectasis; and its detection may prevent unnecessary collapse treatment. This is particularly important in the surgical treatment of patients with long-standing disease, in whom these lesions are much more likely to be present.

[1] *Amer. Rev. Tuberc.*, 1937, **36**, 8.

ELEPHANTIASIS CHIRURGICA

Swelling of the arm after radical amputation of the breast may indicate a recurrence of carcinoma, but this is by no means always the case. With the object of ascertaining the state of and the part played by the axillary vein in these swollen arms, J. R. Veal[2] of New Orleans has studied twenty cases radiologically after the injection of thorium dioxide into the basilic vein. He finds that post-operative oedema of the arm may be the result of lymphatic obstruction and so correspond to the elephantiasis chirurgica which Halsted described in 1921, or it may be due to constriction or occlusion of the axillary vein, or to both lymphatic and venous obstruction. Obstruction of the lymphatics alone may appear shortly after operation, or may become perceptible months or even years later. The oedema is persistent and brawny, and may be associated with recurrent inflammatory reactions. Venous obstruction produces a different type of swelling. The oedema is soft, pits on pressure, and subsides partially or completely when the arm is elevated; vasography clearly demonstrates obstruction to the vein, which may be partial or complete as the result either of thrombosis from handling during operation or of pressure by scar tissue. When the arm is abducted the oedema of venous obstruction may diminish or disappear altogether. Lymphatico-venous obstruction is manifested by a pitting oedema which gradually becomes persistent and brawny, and vasography shows venous obstruction. E. A. Devenish and W. H. Graham Jessop[3] have found that non-malignant swelling of the arm appears in one out of every six patients after radical mastectomy, and that in one-third of those so affected the enlargement is great enough to cause some distress. They report encouraging results from continuous suspension of the swollen limb, massage, and the subsequent application of a light corset to the affected arm. These two papers indicate the importance of avoiding injury to the axillary vein when performing radical amputation of the breast. Light artery forceps only should be used upon the tributaries of the vein, and these should be tied with the finest ligature material, close to the vein itself but not close enough to constrict its lumen. Care should be taken that the axillary vein is not handled unduly, that a drainage tube is not left in contact with it, and that so far as possible there is an adequate covering of soft parts to prevent constriction by the healing wound. Not so very long ago some surgeons were amputating these distressingly large arms. The modern treatment of carcinoma of the breast and attention to the details elicited from these recent papers should make such mutilation more than ever unnecessary.

[2] *J. Amer. med. Ass.*, 1937, **108**, 1236.

[3] *Brit. J. Surg.*, 1927, **25**, 261.

THE HALF-YEARLY INDEXES

The usual half-yearly indexes to the *Journal* and to the *Supplement* and *Epitome* have been printed; they will, however, not be issued with all copies of the *Journal* but only to those readers who ask for them. Any member or subscriber who wishes to have one or all of the indexes can obtain what he wants, post free, by sending a postcard notifying his desire to the Secretary, B.M.A. House, Tavistock Square, W.C.1. Those wishing to receive the indexes regularly as published should intimate this.

The standing commission of the International Red Cross held a meeting at the headquarters of the British Red Cross Society in London on January 24, to determine the agenda and arrangements for the sixteenth International Red Cross Conference, which is to meet in London from June 20 to 24.

Sir David Wilkie will deliver the Mitchell Banks Memorial Lecture on "Chronic Duodenal Ileus" in the Medical School of the University of Liverpool on Thursday, February 3, at 4 p.m.

We regret to announce the death, after a short illness, of Sir Thomas Stanton, K.C.M.G., M.D., who had been Chief Medical Adviser to the Secretary of State for the Colonies since 1926, when that post was first created.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

METHODS OF GIVING BLOOD TRANSFUSIONS

BY

H. F. BREWER, M.D., B.Ch.

In the consideration of this subject a brief note on some of the indications for blood transfusion and on the selection of a donor and the withdrawal of the blood forms a suitable introduction.

Indications for Blood Transfusion

In the anaemia of acute or chronic haemorrhage blood transfusion should be regarded as imperative if the haemoglobin falls to 40 per cent. (Haldane). A drop below this level is dangerous to life; if the haemorrhage has been controlled transfusion will shorten an otherwise long convalescence. In a severe infection (with or without proved septicaemia) transfusion is indicated if the haemoglobin recedes to 65 per cent.: it aids the patient's resistance by combating the anaemia and also by supplying fresh human complement.

Before a severe surgical operation a minimal haemoglobin figure of 70 per cent. should be aimed at. In surgical shock blood transfusion constitutes the best method of increasing blood volume, which has diminished owing to stagnation of blood in the abdominal veins. Lastly, blood transfusion is a valuable therapeutic weapon in the haemorrhagic states and in blood diseases; in the former it is the only specific, though temporary, remedy for haemophilia.

Selection of a Donor

Any adult individual of either sex, with a normal but not necessarily robust bill of health, is suitable. Syphilis and malaria form the two significant transmissible diseases that must be excluded, and allergic individuals are best avoided. Good superficial elbow veins are of practical advantage. It is better that the donor should be of the same blood group as the patient than that Group O subjects should be employed as "universal" donors. In addition to the standard grouping (satisfactory agglutinating serum is now available commercially, from Messrs. Burroughs Wellcome and Co., with a duration of potency of six months) a direct test for compatibility between a drop of the intended donor's blood and the recipient's serum is advised; this provides a check on the original groupings and also excludes the possibility of a subgroup reaction peculiar to the two individuals concerned. Where grouping sera are not available this direct test may alone form the basis of compatibility. It is preferable that a donor should not have had a heavy meal within two hours of being bled; women may donate without ill effect during menstruation providing the latter be normal.

Collection of Blood from Donor

The donor should lie supine on a table, couch, or bed with the selected arm supported on a small firm pad or sandbag. The pneumatic cuff of a sphygmomanometer is adjusted round the upper arm, and the skin over the front of the elbow well cleaned with ether. The veins are rendered full and prominent by inflating the cuff to a pressure of 75 to 85 mm. of mercury and also by the donor opening and closing his hand on a roller bandage. On selection of a suitable vein (using palpation, if necessary, as well as inspection) a small intradermal injection of 1 to 2 minims of 2 per cent. novocain is given over the site of intended puncture; about two minutes are allowed for this to act. A tiny nick of about 1/8 inch is then made in this anaesthetized area of skin with the point of a scalpel, its length being only slightly greater than the diameter of the small French's needle to be subsequently introduced; it heals rapidly, does not require a stitch, causes no inconvenience, and is not to be confused with a deliberate incision by cutting down on the vein.

Removal of the blood is carried out by a small French's needle (Fig. 1) attached to about twelve inches of stout

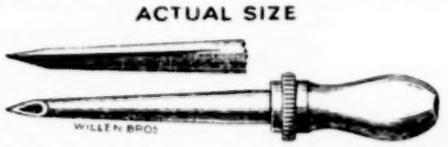

FIG. 1.—Small French's needle (stainless steel; length of shaft 35 mm.; 7 S.W.G. at mount, tapered to 13 S.W.G. at point; uninterrupted lumen).

rubber tubing of relatively wide bore (internal diameter 5/16 inch) and preferably interrupted by a short glass tubing connexion near the needle to serve as a window. The needle is inserted into the lumen of the distended vein through the small nick in the skin and held firmly in position by the operator; slight adjustment in the depth of insertion ensures the maximum flow of blood, which is aided by the donor opening and closing his hand on a roller bandage about every half-minute. The secret in securing a satisfactory volume of blood from a donor without difficulty is to obtain a good and rapid flow through the needle and tubing throughout the period of collection; liability to clot formation is thus reduced to a minimum.

Sets of rubber tubing with the glass connexions may be sterilized by boiling, or by being wrapped in a towel and put in an autoclave at 120° C. for half an hour. The French's needles, the points of which it is imperative to inspect regularly with a lens and keep well sharpened, are sterilized in spirit or placed in liquid paraffin in a small glass container that is put in a hot oven at 155° C. for one hour. The tubing and attached needle are well rinsed through with sterile normal saline preparatory to use.

The donor's blood is collected in a sterile graduated receptacle containing sodium citrate solution as an anticoagulant, admixture being ensured by gentle agitation as the blood flows in. Fifty c.cm. of 3.8 per cent. (isotonic) sterile citrate solution is recommended for 600 c.cm. of blood, this amount being increased or decreased according to whether a larger or smaller volume of blood is to be collected. A concentrated sterile solution of sodium citrate—1 gramme in 4 c.cm. of distilled water—is put up by the British Drug Houses Ltd. in small dark-glass ampoules, and keeps well under these conditions; the contents of two of these ampoules added to 50 c.cm. of distilled water or normal saline (the latter resulting in a slightly hypertonic solution) form a satis-

factory anti-coagulant for 600 c.cm. of blood. The amount of citrate used allows of considerable latitude, but, speaking generally, it should be in the proportion of approximately 0.3 gramme for every 100 c.cm. of blood collected; this is known to err on the safe side, as well as being harmless. It is advisable that the water (including that used in the preparation of normal saline) be rendered as free as possible of dead bacteria and other organic particles by being doubly distilled.

When the requisite volume of blood has been obtained from the donor the sphygmomanometer cuff is deflated and the needle then withdrawn. A dry dressing, to be kept on for forty-eight hours, is all that is required; the application of iodine is to be deprecated, on account of its liability to cause a burn. The donor should lie down for half an hour and be given some light refreshment before leaving. Maximum suggested donations from an average man or woman are 800 c.cm. and 650 c.cm. of blood respectively.

"Cutting down" and exposure of a donor's arm vein by deliberate incision should be quite unnecessary (it is rightly not permissible on the members of the vast majority of voluntary blood transfusion services). It will be seen from the foregoing that the indirect use of citrated blood from the donor is advocated; both to the operator and to the donor it has definite advantages over the direct arm-to-arm technique with whole blood, and the small addition of the anti-coagulant salt has from wide experience proved in no way deleterious to recipient or to transfused blood.

Transfusion of the Patient

The types of transfusion used fall under two headings, depending mainly on the rate of flow and volume of blood given: (I) the ordinary relatively rapid transfusion of quantities up to 800 c.cm. of blood; (II) the slow continuous-drip transfusion of much larger volumes (necessitating two or more donors). For Type I, which has the wider application—although 750 c.cm. of blood raise the actual haemoglobin of an average-sized adult patient by approximately 15 per cent. only—three convenient methods are described, and they are, in order of simplicity:

TYPE I.—(A) FUNNEL GRAVITATION METHOD

The apparatus consists of:

1. A 300-c.cm. capacity graduated cylindrical glass infusion funnel (Fig. 2), attached to the outlet of which is two feet of rubber tubing (3/16-inch bore) ending in a male Record-fitting mount. The funnel and tubing are run through with normal saline, which displaces air in the latter, and about 40 c.cm. of saline are allowed to remain in the funnel by closing a screw clip on the upper part of the tubing. (A Laurie glass drip bulb can be conveniently interposed in the tubing near the funnel, but is not essential.) The mouth of the funnel is lightly plugged with sterile gauze.

2. Two inches of narrow stout-walled tubing (1/8-inch bore) having a female Record-fitting mount at one end and a similar male mount carrying a Record-fitting needle (1.5 mm. diameter or smaller, and 36 mm. length) with a short bevel at the other. A bulldog clip is affixed to the proximal part of the tubing (Fig. 3).

The anterior elbow veins of the patient are rendered full and prominent by inflating a sphygmomanometer cuff placed round the upper arm to about 80 mm. of mercury, the patient co-operating, if possible, by opening and closing his hand on the same side. The arm is fully extended with adequate support, in a good light.

The skin at the site of puncture of a chosen vein is anaesthetized by a small intradermal injection of 2 per cent. novocain and a small nick is made in it, as described for bleeding a donor. The Record needle, attached to the short piece of narrow stout-walled tubing already described, is pushed through the skin nick into the vein; its point is indicated to be in a satisfactory position in the lumen of the latter by a brisk flow of blood from the female mount at the end of the tubing on momentarily releasing the bulldog clip; slight adjustment in the depth of the needle may be necessary to obtain this. The sphygmomanometer cuff is then immediately deflated and the needle fixed firmly in position with a

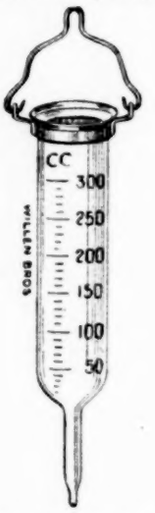

FIG. 2.—Cylindrical glass infusion funnel.

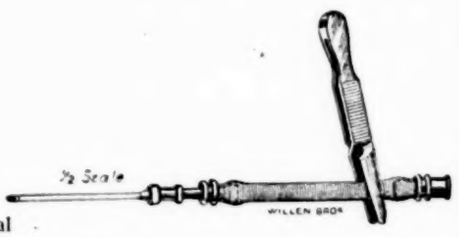

FIG. 3.—Needle tubing connexion.

piece of adhesive strapping passing over the mount and the proximal part of the shaft.. Warning is given to the patient not to move the arm. Firm connexion is now made, by adjusting the mounts, between the needle tubing and that attached to the funnel; the bulldog clip on the former is removed, the screw clip on the latter opened, and with the funnel held above the patient's level saline will flow into the vein. Before the saline is exhausted the donor's blood at 37° C. is added to the funnel and replenished from time to time when the level falls to about the 50-c.cm. mark. The rate of flow can be controlled by the screw clip or by raising or lowering the funnel in relation to the patient. At the end of the transfusion the bulldog clip is replaced on the needle tubing, the needle withdrawn, and a simple dry dressing applied.

With the exception of the needle the whole of this simple apparatus may be sterilized by boiling or in an autoclave. In a patient who is very restless, or in whom the veins are small and difficult, the Record-fitting mount at the end of the funnel tubing may be inserted into two inches of narrow tubing carrying a small glass Keynes cannula; the latter is then tied into a suitably exposed vein (see Method C below), after displacement of the air, by running through some of the saline from the funnel.

(B) JUBÉ SYRINGE METHOD

The apparatus (Fig. 4) consists of:

1. The special syringe. This comprises a glass barrel with two side metal tube openings, and a metal plunger with a longitudinal groove which does not quite reach its base. The components are fitted together by means of a screw cap; the capacity of the syringe may be either 5 or 10 c.cm. With the plunger pushed right down and the longitudinal groove opposite one of the side openings withdrawal will suck in fluid only by way of the latter; if the plunger be now rotated through 180 degrees, so that the groove is directly opposite the other side opening, pushing it down will empty the syringe through this orifice. The principle depends on unmasking one of the barrel openings with the groove of the piston while sealing the other with the convexity.

2. Two pieces of narrow stout-walled tubing which fit the side metal tube openings on the barrel of the syringe. One of these, about ten inches in length, has a weighted perforated sinker at one end; the other, about six inches long, terminates in a male tubing mount which exactly fits into the mount of the metal Jubé needle.

3. The Jubé needle, with its well-fitting trocar, the sharp point of which projects just beyond the rounded end of the needle when the mounts of both are in apposition.

The two pieces of rubber tubing are fixed to the side tubes of the syringe, and the perforated sinker at the end of one is placed in sterile saline solution. The syringe and attachments are now filled completely with saline by drawing the latter into the barrel whilst the groove on the plunger is opposite the saline connexion opening, and expressing it through the other piece of tubing after rotating the barrel through 180 degrees to bring the groove opposite the outlet orifice; more saline is then drawn into the syringe, which is left full.

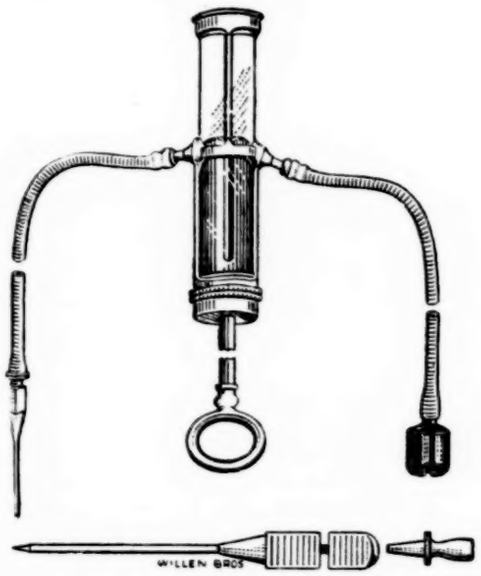

FIG. 4.—Jubé syringe and needle.

With the same technique as described under Method A, the Jubé needle, with its projecting trocar, is pushed into a distended anterior elbow vein of the patient through a nick in anaesthetized skin at the site of intended puncture. A rapid efflux of blood from the needle following momentary withdrawal of the trocar indicates a satisfactory insertion. The sphygmomanometer cuff is immediately deflated and the needle fixed to the skin by adhesive strapping, which passes over its shoulder. The trocar is now withdrawn and the male mount on the end of the syringe outlet tubing quickly attached to the needle mount. By pushing down the plunger of the syringe, with the groove opposite the outlet orifice, and injecting saline into the vein it can be seen whether the needle is well inserted. This assured, the tubing end with the perforated sinker is transferred from the saline to the container with the donor's citrated blood. The latter is drawn up into the syringe and injected into the patient in a series of syringefuls by manipulation of the plunger as described. At the termination of the transfusion the needle is withdrawn still attached to the tubing mount and a small dry dressing applied.

The Jubé syringe components and the needle and trocar may be sterilized in spirit and then rinsed in sterile saline; the pieces of tubing and their fittings may be boiled. In cases of difficulty the recipient's vein may be exposed and the needle and trocar inserted direct; on withdrawal of the latter the needle may be pushed a short distance up the lumen of the vein so as to anchor it more firmly.

(C) THE KEYNES FLASK METHOD

The equipment (Fig. 5) for this comprises:

1. A thick glass conical flask of about a litre capacity provided with a side tube to which a piece of rubber tubing

FIG. 5.—The Keynes flask and fittings.

carrying a glass air filter and rubber bellows may be attached. The flask is graduated in 100 c.cm.

2. A rubber bung which closely fits the mouth of the flask and carries a curved glass delivery tube angulated inside the flask so that its lower end, ground slightly obliquely, reaches into the corner. (This part of the delivery tube may with advantage be interrupted at about its middle by two inches of stout-walled rubber tubing.) The portion of the delivery tube outside the flask is curved to end vertically in a tapered extremity, which projects through a small rubber cork about the level of the upper part of the flask neck.

3. A small glass barrel of some 10 c.cm. capacity which serves as an air lock. The mouth of this accurately fits the cork on the delivery tube, and to its lower end is attached two feet of rubber tubing (3/16-inch bore) terminating in a male Record-fitting mount, with a small glass window interposed immediately above the latter; close to the mount is a bulldog clip.

Blood is collected from the donor direct into citrate solution in the flask; the bung with the delivery tube is then inserted tightly into the mouth (it is wise, before collection of the blood, to confirm the correct position of the end of the delivery tube with the bung inserted), and the air bellows and filter are attached to the side tube. The barrel of the air lock and its tubing are completely filled with normal saline and placed ready in any suitable sterile container.

With a similar Record needle and short rubber tubing attachment and mounts as described under Method A, the needle is inserted in an anterior elbow vein of the patient by an identical technique and strapped in position. The mount on the end of the air-lock tubing is now fitted to that on the needle tubing and the clip on the latter removed. On releasing the clip on the tubing of the air lock, held above the patient's arm, satisfactory insertion of the needle will be indicated by a slight drop in the saline level in the barrel. The mouth of the latter is then fixed securely to the rubber cork on the end of the delivery tube and the clip on the air-lock tubing removed.

Positive pressure being produced inside the flask with the bellows, citrated blood rises in the delivery tube, pushing the air in the latter into the barrel of the air lock, from which a corresponding volume of saline passes into the recipient's circulation. As the blood begins to flow into the air lock the remainder of the saline solution is driven on into the patient's circulation, to be followed by the blood, an upper level of which is present in the barrel. The rate of flow, as judged by the efflux from the delivery-tube nozzle in the air lock, is easily controlled by variation in the positive pressure produced by the bellows. When the flask is almost empty it is held tilted towards the end of the delivery tube inside so as to aid exhaustion; as soon as air rises in the delivery tube and displaces the blood level in the air lock the tubing on the latter is clipped and the needle withdrawn from the patient's vein. If preferred a Jubé needle and trocar, with a corresponding mount at the end of the air-lock tubing, may be employed for the venepuncture.

When the veins are small or inaccessible a Keynes glass cannula with a short narrow tubing connexion tied on to the air-lock tubing mount and full of saline can be used. Omitting application of a sphygmomanometer cuff, except for preparatory localization, the vein is cut down on and exposed for about three-quarters of an inch under local anaesthesia (2 per cent. novocain with a small addition—1 minim to each drachm—of liq. adrenalin. hydrochlor. 1 in 1,000, as a haemostatic). With a blunt aneurysm needle three separate lengths of No. 0 catgut (or No. 0 silk) are passed under the vein, and the latter tied distally with one of these. Just proximal to this ligature a transverse cut (not complete division) is made with a sharp pair of iris scissors in the wall of the vein, held in forceps; the end of the cannula is introduced into the lumen of the vein through this opening and tied in position around the slight constriction on its neck with one of the lengths of catgut already in position. At the termination of the transfusion the ligature around the cannula is cut and removed; an assistant then withdraws the latter as the vein is tied above the opening in its lumen with the remaining lengths of catgut. The edges of the skin incision are sutured with horsehair.

Sterilization of the apparatus (omitting the bellows) is best carried out in the autoclave after wrapping in towels; the needles are placed in spirit.

All the above methods—A, B, and C—will give satisfactory results. The infusion-funnel gravitation technique involves the use of very simple apparatus; but it has not the reserve of pressure sometimes necessary to overcome venospasm in a collapsed patient. The Jubé apparatus is compact, easily sterilizable, reliable, but expensive. The Keynes apparatus is very satisfactory in the hands of those well acquainted with their own apparatus; the various connexions and the glass and rubber tubing need frequent supervision and overhaul.

Whatever method is employed sterility throughout is imperative and all apparatus must be scrupulously clean; both for donor and recipient the employment of well-sharpened needles in rendering the task of the operator easier cannot be too strongly emphasized. The blood should not be transfused into the patient too rapidly—a pint in half an hour is a reasonable rate. Lastly, in this relatively rapid type of transfusion care should be taken to give the blood at as near body temperature as possible; strict attention to this also eliminates mild reactions in the patient resulting from minor degrees of cold agglutination. In Method A warm blood is added to the infusion funnel about 150 c.cm. at a time. In B and C the blood receptacle and the Keynes flask respectively are stood in water at 37° C. during transfusion. In infants and young children, in whom the antecubital veins are very small, the introduction of a needle or fine glass Keynes cannula into the internal saphenous vein, exposed near the ankle, is recommended.

Untoward post-transfusion (non-haemolytic) reaction in a patient is best controlled by the hypodermic injection of morphine tartrate 1/6 to 1/3 grain, and adrenaline hydrochloride (1 in 1,000) 7½ to 15 minims, the dose varying according to the size of the patient and the degree of reaction.

TYPE II

The slow continuous-drip transfusion, introduced by Marriott and Kekwick in 1935, has proved very valuable in raising the haemoglobin percentage of a severely anaemic patient to a high level by giving such amounts as one to four litres over twelve to forty-eight hours. It is especially applicable in severe gastric or duodenal haemorrhage: besides markedly improving the general condition of the patient treated medically, it renders surgical intervention much safer should this prove necessary.

The apparatus (Fig. 6), based on the original description, comprises:

1. A glass container of about four-pint capacity fitted with rubber bung carrying two short pieces of bent glass tubing. To the inner end of one of these a piece of rubber tubing is attached reaching to the bottom of the container; through it filtered oxygen can be bubbled, so preventing red cell sedimentation. The other piece of glass tubing, furnished with a filter, is an exit for the oxygen. The container is encircled by a metal hanger for suspension.

2. A long Laurie glass drip bulb,* fitted to the outlet on the container by about four inches of rubber tubing on which is an adjustable screw clip.

3. Six or seven feet of fine pressure tubing (5 mm. external diameter) connected to the lower end of the drip bulb via a glass adapter and terminating in a special Marriott glass cannula (supplied in three sizes). The right-angled bend near the bulbous tip of the latter enables it to be tied into a vein without causing kinking.

4. An oxygen cylinder with pressure regulator and fine adjustment tap, connected to the inlet glass tubing on the rubber bung of the glass container by rubber tubing interrupted with two or three filters.

About 100 c.cm. of sterile normal saline are poured into the glass container, suspended three to four feet above the patient; by opening the screw clip wide some of this saline is allowed to run through the drip bulb

* The provision of a short side tube towards the upper end of the drip bulb is a recent improvement introduced by the originators of this technique. The side tube terminates in a short piece of rubber tubing closed by a metal clip. By means of this lateral airway the level of the blood in the bulb is easily adjusted during the course of the transfusion. Further, by applying to it a syringe containing air, and closing the screw clip on the tubing above, the pressure in the bulb can be momentarily raised to expel any small clot obstructing the terminal cannula.

and displace air in the pressure tubing and terminal cannula. A saline level with air lock is produced in the drip bulb by momentarily inverting it. The screw clip is then almost closed and the saline flow in the bulb reduced to a slow drip; this and the corresponding flow from the end of the cannula is stopped by occluding the pressure tubing, a short distance proximal to the latter, by a strong bulldog clip. Under local anaesthesia a vein in the forearm, antecubital fossa, or the internal saphenous just above the malleolus is exposed and ligatured; the cannula is introduced up to the shoulder of its bend and tied into the vein just distal to this—using a technique

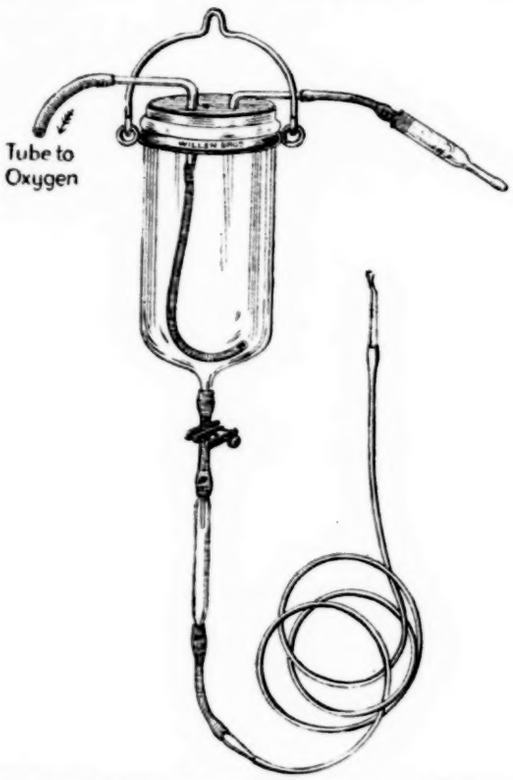

FIG. 6.—Continuous-drip transfusion apparatus (Marriott and Kekwick).

on the lines previously described for a Keynes cannula. Removal of the bulldog clip should now allow the flow of saline as observed in the drip bulb to begin again. The skin edges are sutured above and below the point where the cannula enters the vein. The barrel of the cannula and the distal eighteen inches of tubing, loosely looped, are securely fixed with strips of adhesive strapping to the surface of the limb, covered with sterile gauze and wool, and bandaged lightly. The oxygen is now turned on at a rate of 80 to 100 bubbles per minute, as judged by its flow, through the remaining saline in the container (a Woulfe's bottle, half full of water, through which the oxygen passes, can with advantage be interposed between the cylinder and the suspended container). The rubber bung is temporarily removed and sterile citrated compatible blood up to two pints introduced. The blood used in the container must all be of one group, preferably the same group as the patient; provided care is exercised in its collection from the donors into the citrate solution there is no need to strain it. Forty drops per minute—that is, a pint in four hours—is a satisfactory rate of drip for which to adjust the screw clip, but a faster or slightly slower delivery can be utilized, according to indications.

The frequent attention of a nurse is necessary to control by the screw clip any fluctuation in the rate of drip; it is essential that this be not allowed to slow up unduly or cease for even a short interval. In addition the oxygen flow must be maintained but over-frothing controlled; prevention of red cell sedimentation is also assisted by an occasional manual agitation of the container. More blood is added to the latter when its contents have dropped to about 150 c.cm. The amount necessary to bring the haemoglobin percentage up to a given level can be assessed on the knowledge that 750 c.cm. of blood in an average-sized adult will raise the haemoglobin about 15 per cent.; in the presence of bleeding more is required. A haemoglobin estimation carried out from time to time during the course of the transfusion is helpful.

The donors are conveniently bled in pairs and their blood stored in a cool place; it is shaken up gently and brought to body heat before addition to the reservoir. The advantage of using a forearm vein in the patient is that some mobility of the limb can be allowed. With an antecubital or the internal saphenous vein (thrombosis is less liable with the former) insertion of the larger-size cannula is possible and advantageous, but the limb should then be immobilized with a small splint or sandbags. At the end of the transfusion the screw clip is closed and the cannula removed under local anaesthesia; the vein is then ligatured, if necessary, on the proximal side and the skin edges resutured. All the apparatus used, except the oxygen cylinder, is sterilized by autoclaving in a dressing drum.

In concluding this article it must be emphasized that the methods of blood transfusion are legion; those described above represent a few proved techniques by means of which this valuable remedy may be employed in general practice.

The apparatus of the various techniques considered is obtainable from Messrs. Willen Bros., New Cavendish Street, W.1, who have kindly provided the drawings.

S. Lomholt (*Ugeskr. Laeg.*, 1937) bases his belief that gonorrhoea is on the increase among women in Copenhagen on the returns of the venereal disease dispensaries which provide free treatment under the auspices of the municipal authorities. These dispensaries, which deal with at least two-thirds and possibly three-quarters of all the recent cases of venereal disease in Copenhagen, make detailed monthly returns. The figures for 1931 showed 1,207 male cases and 312 female cases. The corresponding figures for 1936 were 1,647 and 631 respectively. It will thus be seen that the figures for female patients have been more than doubled in five years, whereas the rise in the number of male cases has been much less marked. After discussing possible sources of error which might exaggerate these variations, the author admits that the true rise in the number of male cases may be comparatively small. But the enormous rise in the number of female cases is not to be gainsaid, and he attributes it to the growing alacrity with which young women at the present time indulge in premarital and extramarital sexual relations. It is particularly between the ages of 16 and 18 that this movement has been most marked. The author points out that at least 50 per cent. of all cases of inflammation of the uterine appendages are gonorrhoeal, and that the annual reports of the five municipal surgical hospitals in Copenhagen for 1935 and 1936 have shown that more than 500 cases of salpingitis were treated in them. Every year between 1,000 and 1,200 young women contract gonorrhoea in Copenhagen, and as the prospect of their early and complete cure is problematic, the outlook with regard to stamping out this disease is very poor in the absence of any reliable specific drug or remedy.

THE SLOUGH SOCIAL CENTRE

[FROM A CORRESPONDENT]

The Slough Social Centre, which was opened last year and was recently visited by the King and Queen, is an ambitious effort to meet the social needs of a rapidly growing industrial area. It can fairly be ranked as a pioneer experiment, for although there are community centres on many of the new housing estates, none is conceived upon such bold lines or attracts so large a proportion of the population at its doors. On any evening of the week 1,500 persons are assembled at the Centre. Slough is described even in current gazetteers as a market town with a population of 16,000, but in recent years it has broken its bounds and multiplied its population more than threefold. On what used to be open country within sight of Windsor Castle there are now on every side factories and working-class houses. There is talk already of Slough as a second Manchester by 1960. Eleven thousand people from the distressed areas alone have migrated to Slough, and we are told that the Welsh accent is heard here as frequently as in the Rhondda Valley.

The Centre, which has been built and equipped at a cost of £52,000, itself resembles a modern factory building, except that there is rather more decorativeness about its 600 feet of frontage and its six large welcoming doors. The building consists of three blocks, one for the junior section, one for the senior, and a central one comprising a great hall, seating 1,000 people, with stage and dance floor. Every kind of social, cultural, and recreational facility is provided. There are three gymnasiums, a swimming bath, with artificial sun-ray equipment for use in the winter, abundant facilities for indoor and outdoor games, also for music, lectures, and discussions, and workshops for the teaching of handicrafts. A canteen has been installed where refreshments can be procured at the lowest economic cost. The Centre is still in course of development, and it is hoped to add running and cycle tracks and athletic grounds—altogether one hundred acres of playing fields.

Provision for Physical Education

Unlike the Peckham Health Centre, which it resembles in much of its layout and activity, Slough is not primarily a health organization. One of its important purposes, however, is to provide physical education. It has classes for this purpose, although the word "class" is not stressed lest it should suggest something irksome. The principal gymnasium, equipped with shower baths, is used by men on two nights a week, and by women on two nights, and certain other events, such as boxing and fencing (the latter for both men and women), fill up the rest of the time. The exercises are carefully graded, and skilled instruction is given. In the junior section—meaning by "junior" the ages 13 to 18—a system, though not a compulsory one, of medical inspection has been set up. It is considered desirable for the purposes of the Centre that it should be known whether the young person is fit for the exercises provided, and it is hoped that the habit of seeking medical inspection will become a routine.

Advisory Medical Service

The Centre has two voluntary medical officers who live in the district. Their province is only to advise; no treatment is given, but it is considered that the facility for inspection may furnish a desirable link between skilled medical supervision and national health insurance. One of the officers is already familiar to the lads as a school doctor; the other, who deals with the girls, is the only woman practitioner in Slough. If a boy or girl is found to be in need of medical treatment the fact is conveyed to the parents with a view to bringing him or her under the care of the general practitioner. Should the parents be remiss in this respect there are other ways of ensuring that medical attention is afforded. Both medical officers are themselves members of the Centre, and moving among the nightly groups at the various classes and recreations, if they see a lad or a girl who appears to need attention, they put in a timely word. The medical card in the junior section is a very complete document. It includes a space for personal and family history, home conditions, character, athletics, hobbies, physical measurements, conditions as to cleanliness, the state of the teeth and tonsils, heart and lungs, blood pressure; any such abnormalities as varicose veins, flat-foot, or spinal curvature are noted, and there is space on the card for the name and address of the insurance practitioner.

Infant Welfare and Nursery School

For still younger members of the community there is a flourishing infant welfare centre, where about 150 infants are seen every week by a doctor who is a medical officer of the Buckinghamshire County Council, and in a detached building on the site, put up by the county council at a cost of £4,000, a nursery school has been established for children of from 2 to 5 years, which is already taxed to its capacity of 80. The children receive three meals a day, and during the first term not one child failed to grow and put on weight. In the selection of children for the nursery school certain priorities are observed. The idea is to take in children who have no father and whose mother goes out to work, but preference is given to the not infrequent cases where the toddler in a large family is apt to be neglected, and the not less important case of the only child who in the nursery school may be delivered from some of the misfortunes of that situation and learn its first lesson in sharing.

Finance and Administration

The idea of the Centre came from the employers (a valuable lead being given by Mr. A. N. Mobbs, chairman of Slough Estates Ltd.), and was seconded by voluntary associations and public bodies. Buckinghamshire County Council made a contribution to the total cost, and its education committee is contributing £1,500 a year to the support of the junior section. The senior section is self-supporting. The members of the council of the Centre include Slough industrialists and representatives of the county and urban district councils. An advisory committee consists of representatives of such bodies as the National Council for Social Service and the Industrial Welfare Society, with advisers from the Board of Education and the Ministry of Labour, also the medical officer of health and education officer for the county. The junior section is administered by a committee of local people, with representatives of the churches and of youth organizations. The administrative staff has at its head in Mr. A. T. Carr a very competent warden. One of the chief values of the Centre is that it brings about a mixing of the classes, those who can give socially as well as those who receive; although it does not lay the same stress as Peckham on the family unit, it is for the whole family, including the woman stale from domestic work and the adolescent fresh from school. It also represents a happy combination of voluntary and local authority enterprise.

Dr. L. Haden Guest, M.P., secretary of the Leverhulme Research Fellowships, announces that applications are invited for fellowships or grants in aid of research. They are intended for senior workers who are prevented from carrying out research by routine duties or pressure of other work. Any subject which may add to human knowledge may be proposed for a fellowship, but preference is given to subjects in which other provision for research is inadequate. The amount granted will depend on the nature of the research and the circumstances of the applicant. Forms of application, returnable by March 1 at latest, may be had from Dr. Haden Guest, Union House, St. Martin's-le-Grand, E.C.1.

Nova et Vetera

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA, 1787-1937

On May 14–15, 1937, the fourth oldest medical society in North America celebrated the 150th anniversary of its foundation. John Redman was the first president, and the famous Benjamin Rush, who had signed the American Declaration of Independence in 1783, delivered on February 6, 1787, a discourse on the objects of the College. In the full report of the celebration now published[1] Rush's discourse is described as "a Declaration of Independence of the American Physician." The Philadelphia College of Physicians started with twenty-four Fellows, and now has 680. The original twenty-four founders were divided into twelve seniors and twelve juniors, and among the former was John Morgan the elder (1735–89), the father of medical schools in North America, for he founded in 1765 the medical department of the University of Pennsylvania, the first to be established in the British colonies. The College of Physicians of Philadelphia, though originally modelled on the Royal College of Physicians of London, is now in some respects more like the Royal Society of Medicine than the London College, for it has five sections—of ophthalmology, otolaryngology, general medicine, medical history, and public health, preventive, and industrial medicine—each with its own chairman, "clerk," and executive committee, and meets every month from October to April. The College does not confer diplomas to practise, and has many surgeons among its Fellows, the word "physicians" meaning medical men, and not being restricted to those sometimes called "internists": thus Professor D. Riesman, in his account of the College's library, refers to Sir James Paget, the surgeon, elected a Fellow in 1874, as "one of the most distinguished British physicians." On the other hand, the Philadelphian College has its four censors; and its *Transactions*, which began in 1793, resembled the *Medical Transactions* (1768–1820) of the London College in that a number of the articles in both were in the form of letters addressed to, and communicated by, Benjamin Rush and William Heberden the elder respectively, who were the active spirits in connexion with the *Transactions* of the two Colleges.

The library of the College of Physicians of Philadelphia is an outstanding feature. At its centenary in 1887 it contained 38,000 volumes; now the number has reached 178,000. It is particularly rich in incunabula, books printed in what has been called the cradle period of the printer's art—namely, before 1500. Of these it possesses 415 out of the 600 known medical volumes, being second to the Army Medical Library at Washington, which has 450. In 1876 the College received 80 out of the current 280 medical periodicals; now it takes about 1,200 out of the 1,800 in existence.

A number of addresses were delivered at the recent celebration: Sir Henry Dale, the delegate of the Royal Society, speaking on medicine as an experimental science, recalled the solemn warning given him by the late Samuel Gee to forget all the physiology he had learnt, "as it was an experimental science and had nothing to do with medicine, which was still an empirical art": adding, "Some day we hope that medicine, too, may become an experimental science, but that day is not yet with us." Sir Henry rightly believes that the day has now come. Other addresses were on the future of medical research, by the Hon. Roland S. Morris, president of the American Philosophical Society, which has long been closely associated with the College; on the transformation of medicine by public health development, by Professor Hans Zinsser, who considered the part that such institutions will play in the future; on the question why academies were founded, by Professor H. E. Sigerist; on the College, by Dr. G. P. Muller, its president and on the College from 1887 to 1925, by Dr. F. R. Packard, an ex-president and editor of the *Annals of Medical History*.

[1] *Trans. Coll. Phys. Phila.*, 1937, 4 ser., **4**, Supp., 1.

ANNALS OF MEDICAL HISTORY

The final instalment of the volume for 1937[1] contains four main articles, a smaller number than usual, but of very considerable interest and generously illustrated. Colonel Harold Wellington Jones, librarian of the Army Medical Library, better known by its former title, the Library of the Office of the Surgeon-General of the United States Army, contributes from his splendid store "A Portrait Gallery of Physicians." This is accompanied by twenty-five illustrations, including fine reproductions of the paintings of Surgeon-General William C. Gorgas and Dr. Robert Fletcher. Many of the portraits are of former Surgeons-General with old-fashioned beards, but there are also pictures of John Hunter and Bichat. Dr. Francis R. Packard gives an account of William Cheselden and some of his contemporaries and their American pupils, such as John Jones, who was Benjamin Franklin's doctor and the best-known American surgeon before Philip Syng Physick. A kindred subject, the "Rise of British Surgery in the Eighteenth Century, by Dr. Fenwick Beekman, also well illustrated, necessarily covers some of the same ground, but in wider detail, and reproduces Holbein's famous picture—in the Barber-Surgeons' Hall—of Thomas Vicary receiving the Company's Charter from Henry VIII, of which there is a fine replica in the Royal College of Surgeons of England.

Dr. Gilbert Roy Owen gives an interesting account of the famous case of Lady Anne Conway, "the most learned of the female metaphysical writers of England," for whose "terrific recurrent cephalalgia" the advice of an imposing array of consultants, including Harvey, Willis, Mayerne, Robert Boyle, and van Helmont, was in vain. In a sympathetic editorial the life and services of the late Paul Hoeber, who brought out the nineteen volumes of the *Annals of Medical History*, are sketched by Dr. Packard.

[1] *Annals of Medical History*. New Series, Volume 9, Number 6, 1937. Edited by Francis R. Packard, M.D. (Pp. 517–586; illustrated. Volume of six numbers, £2 10s.; single numbers, 10s. 6d.) New York: Paul B. Hoeber. London: Baillière, Tindall and Cox.

A FLORENCE NIGHTINGALE COLLECTION

In the catalogue of Sir William Osler's library Florence Nightingale rightly occupies a place in its select "Bibliotheca Prima," for it was under her that, to quote Osler, in one of the attacks of race-mania, the nursing profession, until then unsettled and ill defined, took its modern position. Many of her manuscripts, letters, and other *memorabilia* are scattered throughout the world, and to catalogue this material would be a pious task. The School of Nursing of the Presbyterian Hospital in New York has done well to bring out a printed catalogue of its Nightingale Collection, which is splendidly displayed in a special room at the nurses' residence. Each class, after studying the history of nursing—a subject taken much more seriously in America than in Britain—contributes something to this museum. The letters, some of which are transcribed, range in date from 1854—in 1853 Florence Nightingale had taken up her first post as superintendent of the "Sick Governesses' Home" in Harley Street—to 1896, but some are undated. In a letter written from Scutari in 1856 she describes as "tons of mischief and rubbish" the books sent from England for the soldiers—odd volumes of novels, registers, and treatises on midwifery.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

Presiding at the annual meeting of the Court of Governors of the London School of Hygiene and Tropical Medicine on January 24 the PRIME MINISTER paid tribute to his brother, the late Sir Austen Chamberlain, whom he succeeds as chairman.

"Even the most inexperienced of statesmen," he said, "would hesitate before taking on fresh liabilities, however nominal, just at the moment when he became Prime Minister. The circumstances in this case were, however, exceptional. In considering the request that was made to me I had in mind the long connexion between my family and this School, the intense interest taken by my father in the study of tropical medicine, my own much more modest share in public health in this country, and, of course, the fact that my brother was for five years your chairman. I think that what finally weighed with me was my sense that your invitation to me to fill my brother's place was perhaps the greatest and sincerest tribute you could pay him."

A Balanced Budget

Continuing, the Prime Minister said he was glad to see that the School had a balanced budget. If they analysed the income they would find that the principal part consisted of the grant from the Exchequer of £40,000. They had £7,000 from students' fees and about the same amount from endowment funds. This meant that the remaining £12,000 of their £66,000 expenditure had to be made up by voluntary contributions and donations. They must expect that if anything happened to give a setback to the present comparatively prosperous condition of the country they might have to face some diminution of voluntary contributions. The existing reserve fund for building and equipment, which was a little over £4,000, was not really adequate, and the moral was that the School was in need of further endowment. One of the most useful forms was the endowment of chairs or readerships. For a professorship £50,000 was required and for a readership £35,000.

The Work of the School

In commending the annual report to the Court of Governors Mr. Chamberlain said that it demonstrated the wide range of the work of the School, the imagination of those responsible for its affairs, and the practical importance of its teaching and research for the public health. The staff had been active both in the laboratories at home and over-seas. He was glad to hear that since the publication of the report a new branch had been instituted through the Ross Institute in Ceylon, in which the School and the Ross Institute would co-operate with a committee of estate proprietors in securing malaria control and other health measures on a group of estates in that country. Mention was made in the report of the conference held in the School in September by the Central Council for Health Education, at which he had himself presided. He was very glad that this School should be associated with efforts to secure a wider appreciation and a fuller use of the public health services, for it was already associated with those services in a variety of ways: in the training of future medical officers of health and in the work carried out on behalf of various Government departments. On behalf of the Ministry of Health, for instance, the School was carrying out researches such as the investigation of problems relating to standards of purity in the milk supply; was supervising the treatment of certain nervous disorders by means of induced malaria; and, in Professor Greenwood's department, was carrying out statistical analyses for the medical intelligence division of the Ministry.

The Dean of the School, Professor W. W. JAMESON, gave an account of the work of the School during the year, and at the conclusion of the meeting it was announced that Mr. Chamberlain had agreed to become chairman of the standing committee of the Ross Institute of Tropical Hygiene.

Reports of Societies

RADIOTHERAPY OF NON-MALIGNANT GYNAECOLOGICAL DISORDERS

At a meeting of the Sections of Radiology and of Obstetrics and Gynaecology of the Royal Society of Medicine on January 21, Dr. R. E. ROBERTS presiding, the radiotherapy of non-malignant gynaecological disorders was discussed.

Uterine Lesions

Dr. W. M. LEVITT said that the principal non-malignant abnormal conditions of the uterus that might be treated by radiotherapy were uterine fibroids, endometriosis, and certain chronic inflammatory conditions. The mode of action on fibroids was largely through the ovaries, and treatment meant sterilization of the patient. Irradiation was therefore contraindicated during the child-bearing age, at all events before the age of 40. He took the age of 40 as a convenient dividing line, but the general impression given by the patient of what might be termed her physiological or ovarian age was a reliable guide. At or near the menopause irradiation became the treatment of choice, except in cases in which the fibroid was of excessive size and causing pressure symptoms, or in which there were acute complications or clinical evidence of fibroid degeneration. *X* rays had the advantage over radium of greater ease of application and of avoidance of an anaesthetic and of any uterine procedure. Radium had the added disadvantage that a very large dose had to be applied to the uterine mucosa to secure sterilization. In the treatment of endometriosis irradiation was effective, but here again the consensus of opinion seemed to be that it must necessitate sterilization. His own experience of radiation therapy in this condition was limited to one case, in which the result supported this view. If that was so it was obvious that where the lesion could be excised without at the same time producing surgical sterilization surgery was to be preferred to *x*-ray therapy.

After a brief reference to the treatment of tuberculous and gonococcal conditions by radiotherapy—a treatment practised abroad, especially in Germany, but very little in this country—Dr. Levitt dealt with the possibility of the production of malignant disease by *x*-ray treatment. The answer to such a suggestion was that malignant disease could only be produced by small doses of *x* rays repeated over a period of years. Such conditions were only fulfilled in radiologists or in those handling *x* rays or radium for experimental or trade purposes.

Extra-uterine Lesions

Dr. J. F. BROMLEY said that menopausal symptoms, either natural or induced, were connected with an increased pituitary output, and it was generally agreed that relief could be obtained from appropriate irradiation. The regular occurrence of really incapacitating headaches, for example, might be due to the enclosure of the pituitary in a sella which, without being pathological, was of uncommon type. The gynaecologist was familiar with the relationship of the ovaries to menstruation, and, with the physician, could be invaluable to the radiologist in planning a distribution of dosage over the endocrine system in such a way as to obtain the maximum therapeutic effect with the minimum amount of *x*-ray dosage to any one endocrine organ. The question whether a "stimulation" dose existed was important and had not been satisfactorily answered. Experimentally the evidence seemed to be against it. There could be no doubt, however, that temporary sterilization in a young patient could be obtained without difficulty by *x* rays, and did not in any way preclude a later possibility of normal conception and the birth of healthy children. Speaking generally, the use of *x* rays, as opposed to radium, appeared to

be preferable in non-malignant gynaecological conditions, as the effect of radium could only be quite local and the treatment of the conditions under discussion was so frequently a matter of treating organs other than the uterus.

Value of Radiotherapy

Mr. LEONARD PHILLIPS gave an elaborate analysis of the literature on the subject which had appeared since a discussion at the Royal Society of Medicine in 1933, chiefly concerning the indications for operation or irradiation, and the respective advantages of the methods, in menopausal menorrhagia and fibroids. The advantages of radiotherapy over operation included the lessened morbidity, the shorter recovery time and period of hospitalization, and the lower cost. With radium there was a very slight mortality, and with *x* rays none. Radium had a certain definite morbidity, due generally to burns, but occasionally other complications, such as broad ligament abscess, phlebitis, pain in the groin, rectal ulcer, and intestinal obstruction, had been noted. The morbidity of surgery, of course, was greater. A moot point was whether radium acted on the ovaries or on the endometrium; if it acted on the ovaries then there was no advantage in using it in preference to *x* rays; indeed there was a disadvantage, because of the many local sequelae of an unpleasant nature following radium treatment. Forsdike stated that with experimental animals the effect was almost entirely on the endometrium; on the other hand, Clarke and Norris had found that late effects on the ovary were destructive of the follicles. It was a matter on which more experimental evidence was necessary. Undoubtedly *x* rays acted entirely on the ovaries, but it was difficult to determine whether radium did so.

A great difference of opinion was evident in literature on the question as to what cases (of menopausal menorrhagia and fibroids) should be handed over to the operating gynaecologist and what should be reserved for treatment by irradiation. At one extreme was Béclère, who declared that fibroids always constituted an indication for *x*-ray therapy. The general conclusion to be drawn was that the cases might be divided into three groups: those in which surgery was obviously indicated, those in which radiology was obviously indicated, and those in which the indication was doubtful. On the question of the possibility of cancer production by irradiation, Essen-Möller of the Lund Clinic recorded six cases of cancer developing after radium treatment.

Mr. Phillips also analysed 165 cases in which subcastration doses had been given for severe haemorrhage in young women. He thought it was now established that there was no danger to future labours from cervical scarring; Murphy's series of over 400 cases had shown this. There was also apparently no danger of deformity or abnormality of the foetus from preconceptional irradiation. In 600 cases Murphy found abnormality in only a negligible percentage (1.1). With regard to the effect of stimulating ovarian and pituitary irradiation for amenorrhoea, menorrhagia, dysmenorrhoea, sterility, and other conditions, an analysis of 100 cases from the Hospital for Women, Soho Square, was disappointing. In about 50 per cent. radiation treatment was a failure; in 40 per cent. there was slight improvement, and the remainder might be described as cures. The only consistent beneficial effect was an improvement in the attendant headache.

Methods of Treatment Compared

Dr. LOUISA MARTINDALE analysed her treatment of 878 cases of metropathia haemorrhagica, fibrosis uteri, and fibromyomata from 1914 to 1937. Surgical operation (hysterectomy or myomectomy) had been carried out in 471 cases with a mortality rate of 1.9 per cent., radiation treatment in 407 cases (deep *x*-ray therapy in 298 and radium in 109) with no mortality. Many clinics in which both methods were practised showed a much lower proportion of cases treated by surgery. Gauss of Würzburg, for example, had treated surgically only 15 per cent. of 1,048 cases. Many people thought that the menopausal symptoms were severe in cases treated by *x* rays, but the results of a questionary sent to her patients with regard to these symptoms did not bear this out. The advantages of *x*-ray over radium therapy were that *x*-ray treatment was attended by practically no morbidity and the treatment was very short. There was no evidence that preconception radiation was harmful to the child. An advantage of radium over *x*-ray therapy was the more rapid cessation of haemorrhage.

Mr. MALCOLM DONALDSON said that it had still to be proved whether small doses of radiation had any effect on subsequent pregnancies. Until it had been established that this was not the case irradiation should not be carried out on patients under 40. In cases of fibroids radiotherapy should only be used when the fibroid was not larger than at most a full-size foetal head. It was difficult with a large fibroid to be certain of excluding any inflammatory condition in the pelvis. Large fibroids were likely also to undergo sarcomatous changes, and the dose given to create an artificial menopause was not sufficient to prevent this. Before undertaking radiotherapy it was essential to explore the uterus, and if the uterus was to be explored the simplest procedure was to put in some radium at the same time.

Mr. CARNAC RIVETT said that most of the speakers had put forward certain contraindications to the radiotherapeutic treatment of fibroids, and if all of them were accepted it seemed as if the only fibroids suitable for *x*-ray treatment were those which gave rise to no symptoms at all! He went on to refer to the great severity of the comparatively rare cases of menorrhagia in women of 18 to 20; he knew of one patient who had died from haemorrhage in simple profuse menorrhagia. Mr. RALPH PHILLIPS objected to the term used by Mr. Leonard Phillips—"sub-castration dose." It was a castration dose, but the function recovered; the ovarian function could not be permanently destroyed, certainly not in young women. The radiotherapy of non-malignant disorders in general had suffered from the fact that the cancer problem dominated the mind of the radiotherapist, and while he knew what he was trying to do in cancer he had no idea of what he was aiming at in non-malignant conditions. The fundamental basis of radiotherapy in non-malignant conditions was destruction of the leucocytes and radiosensitive cells of that type. The effect of radiation was invariably destructive even in small doses.

Professor MILES PHILLIPS, president of the Section of Obstetrics and Gynaecology, who wound up the discussion, said that as a practising gynaecologist he had learned more than he had expected from what had been said. He mentioned the effect of stimulation of the ovary in a woman of 29 who had not menstruated for ten years; after radiation menstruation began again, and later she had two children. With regard to the effect of radium in stopping menstruation, he thought this depended upon the time in the menstrual cycle when radium was inserted. If it was inserted in the early stages it was possible to tell the patient with precision that she would not have another period; if in the later stages, another period was likely.

WATER POLLUTION AND TRADE EFFLUENTS

Dr. A. PARKER of the Water Pollution Research Board of the Department of Industrial and Scientific Research, in a paper read before a joint meeting of the Institutions of Civil Engineers and Chemical Engineers, said that the public water supply undertakings in Great Britain distributed from 1,000 million to 1,500 million gallons of water per day to a population of 35 to 40 millions. This quantity was used mainly for domestic purposes, though some is used for industrial purposes.

In addition to the large quantity distributed by the public supply undertakings, even larger quantities were drawn direct from rivers, springs, and wells for agricultural and industrial requirements. Beet sugar factories, many textile works, paper works, and other factories, for example, each used several million gallons of water a day in manufacturing processes. Railway companies and most large works required large quantities for raising steam, and enormous volumes were used in condensers and coolers. The largest electricity generating stations each circulated 400 to 500 million gallons of water a day through condensers. Water for many industrial processes need not be of the same high chemical and bacteriological quality as drinking water. But water of high quality was necessary in the manufacture of foods and beverages, in the treatment of textiles, in raising steam, and in some other processes. The water distributed by many public supply undertakings, though suitable for domestic purposes, was in fact often unsuitable for certain manufacturing processes owing to its hardness or to the presence of substances detrimental to the quality of the products manufactured.

Problems of Pure Water Supply

Though it was generally recognized, Dr. Parker continued, that the purity of the water supplies was a major factor in public health, the average member of the community scarcely realized the problems of water supply and the precautions necessary in protecting gathering grounds and wells and in the treatment of water to ensure that the supplies distributed were absolutely safe for drinking and other domestic purposes. Public interest in the subject seemed to be aroused only at times of emergency, when there was a shortage of water during abnormally dry periods, or when there were outbreaks of water-borne disease such as occurred in 1932 at Malton and Denby Dale in Yorkshire, in 1936 near Sutton in Surrey, and recently in Croydon. Available sources of uncontaminated water, both surface and underground, were gradually being allocated. In some areas water had been withdrawn from underground sources for many years at a rate greater than that at which it had been replaced by natural percolation; there had in consequence been a marked lowering of the level of underground water in these areas. Many of the surface supplies were obtained from the upper reaches of rivers where there was little or no contamination by polluting discharges. Considerable quantities—several hundred million gallons a day—however, were drawn by public supply undertakings from the lower reaches of rivers below points of discharge of sewage and trade effluents of various kinds. These undertakings had to incur great expense and shoulder considerable responsibility in purifying the water before distribution.

With the provision of more houses with modern conveniences, and with developments in industry, there was certain to be an appreciable increase in the next few decades in the quantity of water of good quality required in this country. How this increase in demand was to be met would have to be seriously considered. It could be met provided that determined efforts were made to prevent undue pollution of the resources. Unfortunately many rivers and streams in Britain were badly polluted by sewage and trade effluents. In some areas discharges of waste liquids from factories had so polluted the water supplies most easily accessible to adjacent factories that they were quite unfit for the purposes for which they are required. Pollution not only caused difficulty in the provision of adequate supplies of water of the quality required for domestic, agricultural, and industrial purposes; it also adversely affected the fisheries, the recreations of the people, and general amenities. Dr. Parker then discussed some of the difficulties in preventing or reducing pollution by industrial effluents. With regard to the waste waters from the various branches of the milk industry, the work of the Water Pollution Research Board had proved that the quantities of polluting matter carried away in the wastes could be greatly reduced by simple and inexpensive modifications in the operations within the factories to reduce losses of milk, whey, buttermilk, and other products and by-products. If adequate drainage trays were installed at all the depots and factories in this country the total saving of milk would be of the order of three million gallons per annum, or £150,000 per annum with milk at an average wholesale price for all purposes of one shilling a gallon. The investigation had also demonstrated on a large scale that the waste waters necessarily discharged could be efficiently purified by biological oxidation by methods similar in principle to those in operation at sewage disposal works.

Local News

ENGLAND AND WALES

Hospital Accommodation in the West Riding

Some time ago the West Riding County Council set up a composite committee to consider the question of hospital accommodation in the county administrative area. This committee visited hospitals in Yorkshire and other parts of England and on the Continent, and has consulted with representatives of the medical and administrative staffs of voluntary hospitals in the West Riding. In the committee's opinion 3,178 additional beds are needed for the county as a whole to provide accommodation on the scale of four general hospital beds per 1,000 of population. To meet the requirements of the several areas new hospital accommodation containing 1,250 beds in general hospitals should be provided, and the county council should co-operate with the governing bodies of hospitals for specialized forms of treatment. The Public Health and Housing Committee of the West Riding County Council, having considered the reports from the special composite committee, has adopted these recommendations, and recommends further that one hospital should be built in South Yorkshire between Doncaster and Barnsley, and another to the north of Leeds and Bradford to serve the north-west of the West Riding. A full account of these and other recommendations, and of proposals for further maternity accommodation, appeared in the *Yorkshire Post* of January 18.

London Manchester Medical Society

The first annual dinner of the London Manchester Medical Society was held at the May Fair Hotel on January 20 under the chairmanship of Mr. H. Pomfret Kilner and was attended by some fifty Manchester medical graduates at present in London. The principal guests were Sir Alfred Webb-Johnson and Professor E. D. Telford, and their health was proposed by Professor L. J. Witts, who brought them both within his own sphere by describing them as surgeons—men of blood and iron. To this toast Sir Alfred Webb-Johnson replied in a reminiscent vein. "The M.R.I." was proposed by Dr. Julius Burnford, who recalled the time when the Manchester Royal Infirmary was situated in Piccadilly and had as a resident surgical officer Professor A. H. Burgess. Professor Telford, in replying to the toast, said that the Infirmary continued to make progress and now had an active plastic surgery unit, which owed its initiation to the good offices of Mr. Kilner, a department of thoracic surgery, and a newly constituted unit for asthma research. An outward and visible sign of the advances which had been made was the "Plaster Palace," which was being reared up, so it was said, in order to accommodate Mr. Harry Platt's records. The toast of the chairman was proposed by Mr. E. B. Osborn, the only layman present.

In a brief reply, Mr. Kilner outlined the objects of this newly formed society, which, he said, owed its successful conception, very properly, to Mr. Albert Davis. Manchester medical graduates who are interested in the society are asked to communicate with Mr. Davis (93, Harley Street, W.1).

Medical Society of Individual Psychology

The annual dinner of the Medical Society of Individual Psychology was held at the Florence Restaurant, London, on January 13. The chair was taken by Dr. H. C. Squires and the principal speakers were Dr. R. D. Gillespie of Guy's Hospital and Dr. Henry Harris. The latter took the place of Professor John MacMurray, who was absent through illness. Dr. Gillespie mentioned the relationship of the general practitioner to the psychiatrist and to psychotherapy, and stressed the importance of the Medical Society of Individual Psychology in that it existed for the purpose of helping general practitioners in the understanding of psychological problems. He went on to describe what appeared to the practitioner to be the diversity of testimony in the different schools of psychotherapy. But underneath this apparent disunity he believed there was the unity of truth. The various schools of thought had passed through states of aggressiveness, but he believed there were now to be observed signs of a *rapprochement*. He thought that the great need of the present time was for a council to make decisions upon the questions of nomenclature. Dr. Henry Harris spoke on the necessity of the general practitioner being sufficiently educated in psychotherapy to enable him to treat the early or minor forms of psychological illness just as he treated the minor forms of physical specialties—for example, ear diseases. If the general practitioner did not treat these minor psychological complaints, who could? It would not affect the consultant's livelihood; indeed, in the end he would benefit by the spread of knowledge. So would the patient and the general practitioner. The latter would come to treat his patient as a whole and not think separately of his body or of his mind. By means of the pamphlets it published from time to time the society had been instrumental in encouraging interest in the provinces and had many provincial doctors as members. Another thing it encouraged was tolerance, as members were not expected personally to profess the Adlerian doctrines. Tolerance should be expected from psychiatrists, who ought to have a wider view of life than others. Dr. Squires, in reply, emphasized the value of the society to the general practitioner. Not only were the meetings addressed by eminent psychiatrists of all schools of thought but the members were encouraged to bring their own difficulties in treating patients for discussion. The members of such a group could be of great help to each other. Dr. Cuthbert Dukes proposed the toast to "The Guests," and a message was sent to the president, Sir Walter Langdon-Brown, who was unable to be present, and to Professor MacMurray.

Health Campaign Meeting at Oxford

Speaking at Oxford on behalf of the Health Campaign, Mr. Kenneth Lindsay, Parliamentary Secretary to the Board of Education, said it was most satisfactory to know that Oxford was now linked in a most permanent and practical way with research and public health, largely owing to the Nuffield bequests. The Oxford and District Joint Hospital Board, with representation of local authorities and general practitioners and cottage hospitals, was one of the most progressive bodies in the country. As a city Oxford now had good facilities and equipment, and in many ways a good health record. He hoped, therefore, that out of Oxford, by bringing together clinical experience and laboratory knowledge, there might emerge a fresh outlook on the good life. But in contrast our universities, not excluding Oxford, were lamentably behind in physical education. A most interesting report entitled *Student Health* had recently been issued by the National Union of Students.[1] After reviewing the meagre provision in our universities, the report suggests that all students should undergo systematic medical examination and that each university should have a director of physical education and also either a provident scheme, as at Oxford, or a compulsory levy for all students. It did not follow because a student had climbed successfully the educational ladder that he was a fit person at the top and could view the prospects with exhilaration. Mr. Lindsay concluded that as long as we spent £183 million a year on treatment of sickness and forfeited £100 million in lost time in industry we should need health campaigns to remind citizens of the ancient platitude that prevention was still better than cure. Mr. Ben Smith, M.P., after quoting the improvement in the vital statistics, pointed out that the country was spending to-day on sickness, its prevention, detection, and cure, upwards of £52,000,000 per annum; and that despite the great effort being made to improve the housing conditions there were still too many slums and far too much overcrowding. The best index to the success of the campaign for a healthier Britain would be to see the cost of detection, prevention, and cure of sickness falling rapidly as the health of the people improved.

INDIA

Child Welfare in Bombay

The number of live births registered in Bombay during 1936 exceeded by 5,971 the number of deaths in that city. This was equivalent to 5.1 per 1,000 population calculated on the census returns of 1931; there has been no such excess of births over deaths since 1866, the year in which birth-recording was instituted. The number of live births exceeded the figure for the previous year by 1,477 and the average of the last ten years by 9,856. The number of infant deaths registered was 8,946, compared with 8,455 in 1935; this represented a rise of 1,348 over the annual average for the decennium 1926–35. The commonest causes of deaths in infants remain diseases of the respiratory system, with infantile debility and premature birth, the last two conditions still being prominent in the first four weeks of life, while respiratory diseases exact their toll during the remaining eleven months of infancy. The campaign for the prevention of infantile mortality is going ahead, and in his report for 1935 as executive health officer of the Bombay Municipality Dr. J. S. Nerurker comments on the great value of the work done by the ten municipal nurses who visit the poorer homes and popularize elementary knowledge of the principles of hygiene and the prevention of disease, advising prospective mothers to take advantage of the maternity homes, and in some cases supplying bedding for their confinement at home and extra milk and bread during the first seven days of the puerperium. Sick persons are also guided by them to the municipal dispensaries. The proportion of births which were wholly unattended was 4.5 per cent. among the cases where inquiries were made, and that of confinements attended by unskilled women 17.9, these figures comparing respectively with 3.2 and 13.2 in 1935. On the other hand the proportion of childbirths attended by qualified midwives other than the municipal midwives rose to 3.3, compared with 2.8 in 1935, and the percentage of children born in hospital showed an increase of 9. The rate of maternal deaths is falling; it is noted that 70.9 per cent. of confinements took place in maternity homes, compared with 69.2 in 1935. The Infant Welfare Society has been actively engaged in home visits and milk distribution. Dr. Nerurker thinks that the daily milk consumption in Bombay (300,000 lb.) is still

[1] 3, Endsleigh Street, London, W.C.1.

inadequate, in view especially of the prevalence of vegetarianism; larger schemes of milk importation have, therefore, to be devised, with particular reference to the needs and purses of the poorer people. There was a notable increase in the number of primary vaccinations, the percentage of known successes being 92.46.

The Pasteur Institute, Coonoor

During the year 1936 the number of patients treated at the Pasteur Institute, Coonoor, Southern India, was 493. No deaths from hydrophobia occurred among those treated; this is the fourth time in the thirty years' history of the Institute that the mortality rate has been *nil*. The Paris fixed virus was in use throughout the year for the preparation of Semple's carbolized sheep vaccine, and was in its 978th passage at the close of the year. No complications following treatment were reported. During the thirty years 1907 to 1936 the total number of patients treated was 36,604, and the number of deaths among them was 390, a mortality figure of 1.06 per cent. The work at the out-patient centres increased during the year under review, supplies of antirabic vaccine for 15,302 courses being issued, the mortality rate being 0.16 per cent. Out of the nine deaths among the incompletely treated, seven patients developed hydrophobia during the treatment; the other two ran away before the course had been completed. All these patients were Asiatics. The total number of deaths was nineteen, nine of whom were incompletely treated and ten completely treated. Two deaths followed jackal bites, one a fox bite; the remaining sixteen were due to dog bites. The shortest incubation period noted in 1936 was eleven days (after a jackal bite) and the longest 257 days (after a dog bite). The treatment given at the out-centres was the same as that at the Institute. Two cases of paralysis were reported during the year, both at out-centres. Thirty-four new treatment centres were opened in the Madras Presidency in 1936. The total number of doses of antirabic vaccine issued by the Institute was 210,147, as compared with 192,269 in the previous year. Major Iyengar, I.M.S., director of the Coonoor Institute, reports that special propaganda work was conducted in connexion with the Mysore Dasara Exhibition, which was attended by 150,000 visitors from all parts of the State of Mysore, and a lecture on the war against rabies was broadcast. The general clinical and bacteriological work of the Institute also increased in 1936, and postgraduate training was given.

Typhoid Fever in Calcutta

Week-end messages from Calcutta indicate that the recent small outbreak of typhoid fever in that city has now spent itself. It is more than three weeks since the last case was notified to the public health authorities. Most of the patients had been staying at one of the large hotels in Calcutta, and twenty-one Europeans from this hotel were still in hospital on January 23. By what means the infection was spread has not yet been discovered.

Lord Aberdare, chairman of the National Fitness Council, will open on March 2 an exhibition entitled "Health, Sport, and Fitness," which has been organized by the Royal Institute of British Architects at 66, Portland Place, W.1. The exhibition will remain open until March 31, and will then go on a tour of the principal cities and towns of England. It will consist of some 700 photographic enlargements, models, diagrams, and plans, divided into two main sections entitled "Everyday Health" and "Planning Physical Fitness." The first will show how health is secured and improvement can be made by town planning, collective health services, the provision of clean food, and by healthy living and working conditions in home, school, office, and factory. The second section will show how the extensive planning requirements of the Government's national fitness campaign can be best and most economically met.

Correspondence

Radio-active Pads

SIR,—It is being claimed that the use of these pads is authorized as an additional benefit by the Ministry of Health. I have inquired of the Ministry and am informed that "subject to the production by the member of an Approved Society of the necessary certificate by a medical practitioner with respect to the appliance required, it would be in order for the society to make a payment towards the cost of the hire of the apparatus for use by the member. . . . The claim that the treatment is curing 90 per cent. of cases of rheumatism among railwaymen is based solely on the letters which the society has received from members who have used the apparatus. . . . The power of the society to contribute to the cost of an appliance which has been recommended by a practitioner has been contained in the Additional Benefits Scheme from the beginning, and a statement to that effect by the Department is in no sense a special permission in regard to a particular appliance, and is certainly not an expression of approval as to the medical value of the appliance."

I would point out that the cost of 0.01 mg. of radium at the current price (£4,000 per gramme) is eight shillings; a pad sold for ten guineas with this amount enclosed in it therefore shows a great profit, particularly if the mineral ore be used in place of radium bromide. An electrically heated pad can be bought for about thirty shillings, and is an efficient means of treating rheumatic pain. If an electrically heated pad containing 0.1 mg. of radium be sold for twenty guineas the profit must be immense.

Hewitt, Pillman-Williams, and Russ found no benefit of the clinical conditions other than subjective on treating a series of cases of chronic arthritis with weak doses of radon. There is no trustworthy evidence of any biological action of such. A relatively large dose applied continuously for six days had no effect on the excised beating auricles of the frog's heart, suitably protected from infection and perfused with serum (C. M. Scott, *Sp. Rep. Ser. Med. Res. Counc.*, No. 223, 1937).—I am, etc.,

January 24. LEONARD HILL.

Treatment of Anterior Poliomyelitis

SIR,—The articles in the *Journal* of January 22 on the treatment of acute poliomyelitis by Mr. Norman M. Harry (p. 164) and Dr. F. H. Mills (p. 168) will be read with great interest by all practitioners, because it is evident from the progressive incidence of poliomyelitis in Britain, even though the cases are of a mild type, that an increasing burden is going to be put on the profession for their treatment. It is therefore most desirable, in order to avoid waste of time and money, that the profession should face the problem with an agreed policy. The British Medical Association, by its reports on fractures and on physical training, has directed public activity and funds in these fields in an admirable manner. It is to be hoped that a similar unanimity will be attained in regard to the treatment of poliomyelitis. This is not easy to achieve, for the distribution of the paralysis and its rate of recovery are so erratic in this disease that almost any measure applied to a case is likely at one time or another to get the credit for a "miraculous cure."

The claims made by Sister Elizabeth Kenny and her pupils, such as Dr. Mills, for the attainment by her technique of nearly perfect end-results in about 90 per cent. or more of cases make her non-operative, "non-splint" methods very attractive, at first sight, both to the laity

and the profession. But the method is not cheap, nor in practice easy, while Sister Kenny herself has warned us that in the hands of any but her own pupils it may prove disastrous. If, therefore, at the end of the two to three years which she asks individual cases to wait patiently for the final cure, her claims should be found unjustified, what time, what money will have been wasted, and what heart-breaking disappointment awaits patients and relatives! It behoves the medical profession to make the most thorough and scientific investigation of this so-called new system. There is a notable contrast between the careful analysis made by Mr. Harry of thirty-eight cases treated from the early stages on orthodox lines by the highly qualified and experienced staff of the National Orthopaedic Hospital and the thirty-five cases referred to by Dr. Mills as having been treated by Sister Kenny from the onset (under her ideal conditions), but of which he gives no details. Dr. Mills concedes that 25 per cent. of all cases show spontaneous complete recovery; so that we are left with twenty-seven cases on which to judge the method. In Sister Kenny's own book only four or five such cases are described, while the thirty cases entrusted to her at Carshalton are still *sub judice*, as the committee appointed to report on them is not to do so till the autumn, the results having been inconclusive at the end of three months' treatment.

Mr. Harry's analysis shows dramatic improvement under orthodox treatment in all muscles which were not still entirely paralysed four to six months from the onset of the disease. Completely paralysed muscles, therefore, represent the problem in treatment. My only experience of Sister Kenny's methods is a visit with her to the cases under her treatment at Carshalton. These thirty cases did not present any favourable dramatic contrast to the same number of apparently similar cases treated during recent epidemics at the Bath and Wessex Orthopaedic Hospital, many of which have made the most astonishing recoveries; but, as I have already pointed out, this can occur apart from any specialized treatment, and hardly any two cases are scientifically comparable. An unfortunate feature in Sister Kenny's cases was that no detailed muscle charts were available to mark the degree of weakness before treatment was started and to measure progress. Even the muscle chart is subject to personal inaccuracies, but an unrecorded mental impression is even more unreliable. This is particularly so when the worker shows a certain vagueness of anatomical knowledge, which is noticeable in Sister Kenny's book (in spite of her debt to Dr. McKenzie) and in her handling of the cases. Despite her condemnation of splints, Sister Kenny uses a great deal of apparatus, the bulk of her book consisting of details about its construction. To an old-fashioned orthopaedic surgeon, trained by Robert Jones, Lovett, and Putti, her equipment seems antique and often ineffective—for example, her bands to control scoliosis are calculated to disturb the digestive organs even when they are applied correctly to the spine, and apparently her own staff are not always capable of so applying them. Furthermore, her horror of calipers and walking apparatus will induce her to keep bedridden for one or two years the type of case which the orthodox orthopaedic surgeon would have up and attending an ordinary school at the end of six months, which must surely be as sound on psychological lines as a further dose of Sister Kenny's blue curtains. Continuous supervision of such cases for thirteen years, with control of progress on the Harvard Research charts, has shown that they all develop into useful citizens, capable of earning a living wage even under the unfavourable trade conditions of the last decade.

It is sincerely to be hoped that the medical profession at the present moment will give to the extravagant claims made for Sister Kenny in the lay press the cautious Scottish verdict of "not proven," and will take every opportunity of testing them on unbiased and scientific lines. It would be most valuable if all the orthopaedic surgeons who visited Carshalton with her would record their findings.—I am, etc.,

M. FORRESTER-BROWN, M.S., M.D.,
Senior Surgeon, Bath and Wessex Orthopaedic Hospital.

Bath, Jan. 23.

Throat Carriers in Midwifery Practice

SIR,—In their paper recently published in this *Journal* (October 23, 1937, p. 811) Drs. J. L. Miller Wood and F. E. Camps, reflecting on certain cases lately before the courts, discuss the question of the risks in midwifery arising from throat carriers of haemolytic streptococci and set forth certain principles for our guidance. There will be general agreement with much of what they say of the carrier whose throat is manifestly unhealthy and of the procedure to be adopted when cases of infection arise. When, however, with one eye firmly fixed on the hazards of the High Court, they consider the problems of the "clinically normal" throat carrier, I think we are left rather more confused than before.

The nomenclature used is, I think, unfortunate. The authors do not here acknowledge how greatly the practice of serological "grouping" of haemolytic streptococci has simplified the problem of the healthy carrier. In one sentence they speak of "*Str. pyogenes* Group A." To the general medical reader this may suggest that a Group A strain is one variety of *Str. pyogenes*. In the rest of the paper they use the term *Str. pyogenes* alone. Topley and Wilson (1936) have explained their reason for applying the name *Str. pyogenes* to the haemolytic streptococci which belong to Group A. Either term is therefore correct, but "Group A" is the one now more commonly used and understood by those who are not bacteriologists. By its use the practitioner of midwifery and the public health officer are constantly reminded of the importance of differentiating these Group A strains which are responsible for most serious human streptococcal infections from those which belong to other groups and are relatively harmless. Moreover, it is not clear whether the authors are actually considering only Group A strains. Unless that is expressly stated their argument carries no weight, since only a proportion of the strains found in healthy carriers belong to Group A. They say:

"A certain public authority, before engaging its salaried midwives, recently swabbed their throats as a routine, and a high percentage of positive swabs was revealed, thus placing it in the curious dilemma of being unable to appoint midwives otherwise apparently healthy and with unblemished records without rendering itself liable to serious criticism in the event of subsequent infection occurring. It would appear more reasonable to examine the throats clinically in the first instance and only swab those with a suspicious appearance.

"It is inadvisable to swab all prospective contacts as a routine, since experience has taught that swabbing of clinically normal throats for no specific reason, as, for example, when a known case of infection has occurred, will almost inevitably lead to confusion. Further, the examination of swabs, unless performed by those experienced in working with the organism, is liable to yield a high apparent positive rate.

"The swabbing of clinically normal throats, unless they are believed to be a source of infection, cannot be too much deprecated.

". . . there is reason to believe that if the throat is clinically normal the person is probably not infectious."

Thus the authors base their recommendations on "probabilities" and on personal experience of matters about which, so far as I can find, there is very little definite evidence. They argue that clinically normal throats do not carry strains capable of causing puerperal infection in a parturient woman if they gain entrance to the vagina. So confident are they that they emphatically deprecate any attempt to find such strains. Yet their faith is not so strong that they refuse to swab the clinically normal throat of a midwife who is a contact of a case of puerperal sepsis. They advise for such a "clinically normal" carrier whose streptococci are refractory to painting and gargling a seaside holiday and/or even tonsillectomy. In other words, they are content to wait for a case of sepsis to reveal a dangerous carrier and "deprecate" the attempt to find her by routine examination. It is here that I venture to join issue with Drs. Miller Wood and Camps.

In the first place, what is a clinically normal throat? Or, worse still, a clinically normal nose, for we know that the nose has its victims as well as the throat. I cannot think that even experts, much less general practitioners, public health officers, or bacteriologists, would be likely to agree on a standard of normality, nor do I think that such highly controversial evidence would be acceptable in a court of law. Therefore I strongly favour the use of the general term "healthy carrier" to describe a carrier with no history of recent or recurrent naso-pharyngeal infection other than ordinary colds. Secondly, so far as I can find, there is no evidence to show how frequently and for how long such "healthy carriers" do carry Group A strains or whether such strains, though causing no symptoms in their host, may not become dangerous in conditions favourable to their pathogenicity such as exist in the genital tract after labour.

Before I ventured to enter the lists with Drs. Miller Wood and Camps I sought in vain from other laboratories for the evidence which is so urgently needed on these points. Hare (1935), examining 145 strains of haemolytic streptococci found in noses and throats, concluded that "on an average about 7 per cent. of normal persons have Group A strains in the upper respiratory tract." In my investigation into the source of infection in puerperal fever (1935) I had histories of nasopharyngeal infection in the carriers apparently responsible for infecting thirteen patients. Such histories were absent in the case of the other fifty patients, but since no direct inquiry was made for them this negative evidence is inconclusive.

Many local authorities now send to this laboratory or elsewhere swabs taken from their suspected cases or their carrier midwives. Strains isolated are "grouped" by a rapid technique. Very valuable information is thus obtained; an early diagnosis is made, potentially dangerous carriers of Group A strains are recognized, and the suspension of carriers of strains of other groups is avoided. It is, unfortunately, difficult to see how this service could be extended to include the collection of reliable information about antecedent infection in the midwives swabbed. In maternity practice as it is, however much we may deplore it, it is certain that persons suffering from colds or even slight sore throats will still attend confinements. If one of their patients should develop puerperal fever the attendant would be very likely when questioned to "have forgotten" or to make very light of the nasopharyngeal symptoms. Conclusions of scientific value could not be drawn from such data.

While awaiting evidence to the contrary, therefore, I shall continue to regard any carrier of a Group A strain as a potential source of danger; I sympathize with the expectant mother, who would rather know that her nurse was swab-negative than that her nose and throat had gained the highest certificates of clinical normality; and I consider that it is part of our duty to our patients to discover and exclude carriers of Group A strains whenever it is practicable to do so. Unfortunately we know that it is not at present practicable to swab sufficiently often all persons engaged in midwifery. By even fortnightly swabbing we should spot the chronic carrier; but to ensure complete security it would be necessary to swab every midwife, say, two days before a confinement and to safeguard her from exposure to any infection after the swab had been taken—a procedure clearly impracticable except possibly in the highest-class domiciliary practice. In hospitals and nursing homes where maternity nurses are completely segregated from septic cases and their attendants sufficiently frequent routine swabbing might be practicable if there were an adequate reserve of nurses to replace the suspended carriers. Meanwhile, should we not cease to speak of "unsuspected sources" of infection? The modern antiseptic obstetric technique is so rigorous because we know that each patient is exposed to potential—that is, suspect—sources of infection from noses and throats—her own and those of her attendant and familial contacts, as well as from the dust of her room or ward.

Our experience in this laboratory fully supports the contention of Drs. Miller Wood and Camps that swabs should be taken only by competent persons and that they should be examined by bacteriologists experienced in this work. I would add that the person who takes the swab must satisfy himself that no antiseptic of any kind has been applied to the nose or throat for some hours previously; as a corollary to this, that no conclusions should be drawn from sterile swabs; and that the "all clear" report should depend on at least two consecutive negative swabs. From the medico-legal point of view it is always advisable to keep for at least six months stock cultures of puerperal infecting strains and of any nose or throat strains isolated at the time of the infection.

Some of the evidence given in the recent cases to which Drs. Miller Wood and Camps refer came as a shock to me. I wish that we as bacteriologists could do more than we do to convince practising doctors and nurses that it is deplorable to defer the diagnosis of uterine infection until the patient is very gravely ill or to reserve it for cases of "septicaemia" and so postpone until too late any search for the infecting organism and the source of the infection. From my revered teacher in gynaecology and midwifery, Professor Miles Phillips, I learned that "every woman is pregnant till you have proved she is not." In that generous spirit we should regard every case of fever in the puerperium as due to uterine infection till we have proved it is not. And there is only one way of proving it—by bacteriological investigation. We still have to persuade practitioners that for diagnosis the direct evidence derived from the examination of one vaginal swab outweighs all indirect evidence put together, not excluding that gained by a study of the character of "the swings on the temperature chart," as described by one witness. What you lose on the swings you gain on the swabs.—I am, etc.,

DORA C. COLEBROOK.

Queen Charlotte's Maternity Hospital,
Bernhard Baron Memorial Laboratories,
London, W.6, Jan. 21.

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A Spurious Record of Trichiniasis in Britain

SIR,—In a letter headed "Trichinosis" in your issue of December 18, 1937 (p. 1249), Dr. S. W. Sutton comments on the failure of Mr. van Someren to refer in his article[1] to "an outbreak among the boys on the training ship *Worcester*" reported about 1880 by Mr. Power of the Local Government Board.

I find that Mr. Power's report appeared in the Supplement containing the Report of the Medical Officer for 1879 in the Ninth Annual Report of the Local Government Board, 1879–80. It is entitled "On an outbreak of 'fever' that proved to be of the nature of trichiniasis on board the reformatory school ship *Cornwall*." The cases were clinically atypical and the "proof" is given in Appendix A: "Memorandum on microscopical examination, two months after death, of muscles and viscera from the body of Richard Pierce," signed by W. H. Power and Robert Cory. The memorandum (No. 6, pp. 47–64) is illustrated by three plates with eight figures. Even from a superficial examination of these illustrations one can say quite emphatically that the microscopical nematodes found were certainly not *Trichinella spiralis*. They have a double-bulbed muscular oesophagus of a type common in soil nematodes. This memorandum is immediately followed by a second memorandum (No. 7, pp. 68–77) by Dr. Charlton Bastian, F.R.S., who had been asked to examine and report on the drawings and specimens. Bastian carefully described and illustrated the worms anew, and identified them as males and females of a new species of free-living nematode which he named *Pelodera setigera*. His article is entitled "On some nematoids found in the body of a boy who had died from an epidemic disease (supposed to be trichiniasis) on board the reformatory school ship *Cornwall*."

From the above facts it is evident that Mr. van Someren would not have been justified in adding this "outbreak" to his list of reported cases of trichiniasis in Britain.—I am, etc.,

London School of Hygiene and Tropical Medicine, Jan. 19. R. T. LEIPER.

SIR,—In the *Journal* of December 11 (p. 1162) Mr. V. D. van Someren states that in the cases there recorded all those of trichiniasis which it had been possible to trace as having occurred in the British Isles were included. From this it appears that no other cases have been noticed in England, but I venture to think that others have been seen but not specially reported. I remember quite well at a post-mortem examination at St. Bartholomew's Hospital in 1913 or 1914 (I have no record of the exact date) seeing one case, and have a hazy recollection of a second at about the same time. The first case was that of an adult male who had died from some other cause. The abdominal muscles were simply one mass of trichinella larvae.—I am, etc.—

Coonoor, S. India, Jan. 6. G. F. ROWCROFT, Colonel.

Shortage of Calcium in the Diet

SIR,—Dr. Ian Murray suggested in your issue of January 22 (p. 202) that in our article on the shortage of calcium in the poorer-class diet (*British Medical Journal*, 1938, **1**, 59) we had come to a false conclusion as to the inadequacy of the calcium content of this diet and that we had been led to this through a false analogy between the needs of a relatively slow-growing organism like the child and a rapidly growing animal like the rat. The poorer-class diet which we used was described in full in our paper, and it certainly was deplorably low in dairy products, as the poorer-class diet always is. The fact that it did not contain sufficient calcium for growing rats was shown clearly in our experiments, and it was that which made us wonder whether it contained sufficient calcium for the growing child. A chemical analysis of this diet and of the tap-water of the Bloomsbury district showed us how much calcium a child would obtain provided he ate enough food to satisfy his caloric requirements and drank enough water to satisfy his thirst (average). Leitch's review in *Nutrition Abstracts and Reviews* (1937, **6**, 553) told us how much calcium a young child requires, and the comparison of these two figures indicated to what extent the poorer-class diet was deficient in that factor. Undoubtedly if this diet is supplemented by three-quarters of a pint of milk per day (the school supplement is usually only one-third pint) much of the deficiency will be made good, but I would repeat that the calcium deficiency of the poorer-class diet that we described is an actual deficiency determined by comparison of the calcium content found by chemical methods and the generally accepted calcium requirement of the child. It is quite independent of any experiments on animals. Our conclusion, therefore, was drawn independently of the results of our rat experiments, which had in fact merely brought this deficiency to our notice in a most dramatic way.—I am, etc.,

London, W.C.1, Jan. 24. KATHARINE H. COWARD.

Lower Abdominal Pains of Cervical Origin

SIR,—Dr. T. F. Todd (*Journal*, January 22, p. 201) refers to possible untoward effects from alcohol employed for blockage of the pelvic nerves. During five years' experience, first with alcohol and later with proctocaine, I have seen no such results.

His second ground of criticism—the uncertainty of results based upon subjective pain sensations—is so commonly urged that I suppose it must often be relevant. Here, however, women who have suffered previous and sometimes multiple operations (appendicectomy, uterine fixation, removal of tubes and ovaries, hysterectomy, presacral neurectomy, etc.) without benefit respond as well as others. My long experience of ailing women has convinced me that, just as such pains in the lower abdomen felt year in and year out in the same region have a local physical cause, so the degree of relief is a real measure of the success of our physical procedures. I have seen nothing to make me suspect that in this large group, many seriously ill, the "personality of the individual doctor," or the other "camouflaging factors" to which Dr. Todd alludes, play an appreciable part. I would even protest that a sincere and intimate study of this well-defined pain entity must convince us that to seek an explanation for the relief in any influence other than that which is obvious is as idle as the common and often disastrous policy of lightly regarding similar pain entities as "psychogenic" because we fail to discover a local physical cause. As a corollary it follows that the subjective response is rarely ambiguous: an apparent anomaly has a true physical meaning. Thus, one-sided relief means imperfect blockage; the frequent persistence of the commonly accompanying backache after disappearance of the abdominal pain enables us to use the subjective response to differentiate out the elements in a combined pathology, while complete failure often points to an error in diagnosis.

[1] "The Occurrence of Subclinical Trichinosis in Britain. Results from 200 London Necropsies." *British Medical Journal*, December 11, 1937.

To answer Dr. Todd's other point: in the present state of our knowledge a problematic and minor risk does not justify the refusal of nerve blockage for that large residue in whom cervical drainage alone fails to give complete relief. In 183 cases there were forty-eight such—that is, about 26 per cent.—many sorely tortured women.—I am, etc.,

British Postgraduate Medical School, London, W.12, Jan. 24. JAMES YOUNG.

Rehabilitation Centres for Injured Workmen

SIR,—Mr. W. J. Eastwood, in his letter on this subject (*Journal*, January 22, p. 202), quotes from two sources figures in connexion with permanent incapacity from industrial injuries. On the one hand he refers to the evidence given before the committee to the effect that the inevitable permanent incapacity rate is less than 5 per cent. in organized clinics, and on the other hand he quotes a large insurance company as stating that the figure for "some permanent incapacity" is about 35 per cent., irrespective of whether the clinic is organized or not. In asking for an explanation of the discrepancy, and in making a plea for the avoidance of overstatement, Mr. Eastwood will have the sympathy of all. There is a growing interest on the part of the Government in the organization of centres for the treatment of industrial injuries, and the British Medical Association is to be congratulated on fostering it. It is important that its growth should not be retarded by doubts as to the accuracy of statistics which so strongly suggest the necessity for an extension of organization and the immediate establishment of an experimental rehabilitation centre.

From a personal knowledge of the work of organized clinics in the Liverpool district I am satisfied that there will be fairly wide variations in both directions from the 5 per cent. rate for permanent incapacity. To instance the possibilities, may I refer to fracture of the shaft of the femur? This injury is liable to produce a deficiency of flexion of the knee of about 10°. So far as a dock labourer is concerned this disability, though possibly permanent, does not prevent him from returning to his work, and he is not regarded from an insurance company's point of view as "permanently incapacitated." If, however, the patient is a collier, then he is unquestionably incapacitated, since his work demands nothing short of full flexion of the knee. Similarly, an orthopaedic surgeon who is unfortunate enough to sustain a fracture of the terminal phalanx of the big toe need not cease work even for a day, while the average duration of incapacity for a dock labourer who suffers from this common injury is nearly five weeks. In these and many other possible comparisons, does there not lie an answer to the doubt which has been raised as to the accuracy of the figures given in evidence to the committee? Is it not possible that the figure was arrived at from a consideration of injuries treated in clinics where there is a small proportion of workers in the heavy industries? Of all vocations that of a collier demands the strictest and most rigid criteria in regard to fitness for work.

It may be suggested that this factor alone cannot explain the discrepancy. I find the insurance company's figure quite incredible, and am confident that your correspondent could produce statistics from his own clinics which would demonstrate that the 35 per cent. incapacity rate is an "overstatement," in deploring which all will join him. A true estimate of the value of organization in the treatment of injuries can be arrived at, not by comparing one hospital with another but by comparing statistics for, say, Merseyside, where organization is fairly well advanced, with those of some other similar district in which it is manifestly absent. It is possible that insurance companies are in possession of such statistics, and it is to be hoped that they will be presented as evidence before the committee. There can be no possible motive for overstatement by the surgeons from whose clinics the figures were obtained. Those whose work lies in the treatment of injuries must surely be unanimous in affirming that the case for organization and for the establishment of rehabilitation centres is so strong that every possible investigation by the insurance companies, or by the Government, is to be welcomed. The financial support of the insurance companies is needed as urgently in the personal interests of the workers as in their own pecuniary interest. The establishment of organized clinics and rehabilitation centres will prove as sound a business proposition in this country as it is reputed to have been for years in Vienna.—I am, etc.,

Liverpool, Jan. 24. W. S. DIGGLE, M.Ch.(Orth.), F.R.C.S.

Acriflavine Emulsion

SIR,—In the article on the use and abuse of antiseptics in the *Journal* of December 25, 1937 (p. 1286), Professor Garrod and Mr. Keynes point out that the antiseptic action of acriflavine in the treatment of infected wounds is "hindered by intimate admixture with an oily basis, as in the acriflavine emulsion of the *B.P.C.*" They also state that "this elaborate preparation has no demonstrable antiseptic action whatever." In the *Prescriber* of June, 1935 (p. 207), I published a formula for making readily, simply, and cheaply an elegant and highly antiseptic emulsion of acriflavine, as follows:

Acriflavine, *B.P.*	1 gm.
Lime water, *B.P.*	500 ml.
Olive oil, *B.P.*	500 ml.

Dissolve the acriflavine in the lime water, add the oil, and shake thoroughly. (A slightly rancid commercial olive oil is more satisfactory than a highly refined salad oil on account of its higher fatty acid content.)

Acriflavine is acid in reaction, but its solution in lime water in no way diminishes its efficacy as an antiseptic whatever chemical change may occur through its solution in an alkaline liquid. As is well known, its bactericidal action is increased in the presence of serum, also an alkaline fluid. While acriflavine is freely soluble in water (1 in 3) and in alcohol, it is highly insoluble in fixed oils and other organic solvents. On account of this insolubility in oils various methods have been devised to make an emulsion of it, and those so far advanced have been more or less complicated and time-consuming.

The acriflavine emulsion of the *B.P.C.* is prepared as follows:

Acriflavine	1 gm.
White beeswax	41 gm.
Distilled water	250 ml.
Liquid paraffin	750 ml.

Melt the white beeswax in the liquid paraffin and add with constant stirring a warm solution of the acriflavine in the distilled water; stir until cold.

The emulsion made with lime water and olive oil is, *per contra*, simply and quickly prepared; it ensures complete solution of the acriflavine, and provides an elegant and highly antiseptic preparation which is particularly soothing and healing in cases of burns of lesser degree and of scalds. Though stable, the component parts of the emulsion may separate slightly after some time; the con-

tainer should therefore be shaken thoroughly before using the contents. The emulsion is very cheap, a litre costing about two shillings, which suggests its use as a universal dressing for wounds and abrasions as well as for burns and scalds.—I am, etc.,

J. WALKER TOMB, M.D., D.P.H.

Westerham, Kent, Jan. 14.

Treatment of Psychoneuroses

SIR,—I feel that some of the questions raised in the discussion have been dealt with satisfactorily, particularly by Dr. Ross in his last letter (*Journal*, January 15, p. 144). In my original communication one of the points I wished to emphasize was the tendency to overcrowding in the psychological department—a tendency which, in view of the long time necessary for dealing with any single case, is not felt to the same extent in other medical out-patient departments. As Dr. Ross states, "if the doctor is to have half a dozen new patients sent to him every time he comes to the clinic the thing cannot be done." Dr. Ross, like myself, has realized this particular difficulty, and to meet it he offers a valuable piece of constructive criticism—namely, the necessity for impressing on other members of a hospital staff the utility of the department. This is undoubtedly the solution of the problem, and it will be accomplished in time; but again, as he says, "there are many important physicians and surgeons who do not yet believe that our labours are of much value for the present or of promise for the future." It was the recognition of this very fact that called out my original letter.

Until the medical student is given some elementary knowledge of modern psychotherapy this attitude of scepticism will remain, and it is to be hoped that with increasing facilities for such instruction being included in the curriculum the next generation of general practitioners will have sufficient interest in the neuroses to attempt to deal with them in the consulting room. Like Dr. Ross, I am not now referring to those cases for which special knowledge of psychotherapy is demanded—for example, cases of profound obsession—but to the general run of so-called functional cases—neurasthenia, traumatic neurosis, and the like—which could, I think, be dealt with satisfactorily by the general practitioner if he had sufficient interest, which can only be attained by adequate instruction.

Finally, if I might venture to mention one other difficulty which is very obvious in my own practice, it is that the educational attainment, or rather the standard of intelligence, of the patient is a very important matter. It is probably a little lower here than in London and the south generally: it is well-nigh impossible in many cases to attempt any form of explanatory therapy, and one is driven to the use of suggestion in one way or another. But any form of therapy which offers a hope of improving the economic position of a patient out of work is an advantage, and even in quite illiterate labourers, perhaps sometimes because of their illiteracy, suggestion therapy may be successful. Nevertheless one feels that, though removal of a symptom by suggestion may be satisfactory, it is merely an anodyne, and that some form of mental exploration is the method of choice whenever possible. Such mental exploration need not, as Dr. Ross points out, be very deep; in fact it may often be kept on the conscious level and yet be truly curative. The really deep mental analyses can be looked upon as rather in the nature of research problems and not essential to clinical therapy.—I am, etc.,

E. FRETSON SKINNER.

Sheffield, Jan. 19.

Medical Hydrology

SIR,—A report which appeared in the *Supplement* of January 15 (p. 35) of a lecture on spa treatment and rheumatism that I gave to the Plymouth Division of the British Medical Association has just been brought to my notice. In it I am reported to have said that I "did not consider that the mineral content of the waters was of any special importance." What I actually said was that I had not "time to deal with the merits and demerits of various types of mineral water"; and again that "this was a difficult question when one must tread warily," meaning that benefit from the treatment of rheumatism must depend largely on clinical impressions, and no one has the necessary clinical experience of all "waters." I am sorry if these remarks were misunderstood.

May I endorse the remarks made by Dr. Alfred Cox in the *Journal* of December 18 (p. 1249) with regard to the necessity for teaching the student more about the treatment of rheumatism and of the value of hydrotherapy and spa treatment. Scientific hydrotherapy, best combined with rest and change of surroundings at a spa, is invaluable, but it is only one part of the treatment. If the best results are to be obtained each individual must be considered from every aspect and a programme drawn up to include physiotherapy, orthopaedics, removal of sepsis, vaccines, gold, etc., according to the individual's requirements. Until the student is taught this there will be no true balance: either he will be a spa addict believing in the supernatural power of the waters to cure all ills or he will consider spa treatment quackery. There is in existence a Committee for the Study of Medical Hydrology in Great Britain, which has formed a panel of lecturers consisting of men specializing in this science from all over the country. They are willing to give lectures to any medical students' or practitioners' society. I shall be glad to furnish further particulars to anyone interested.

We are attempting to rationalize treatment, but it is only by obtaining recognition in the medical curriculum that we can satisfactorily do so. At Leeds University this recognition is forthcoming; lectures are given and questions asked in examinations under the heading of therapeutics. Several lectures have also been given to students' societies at the London hospitals. It is time the young practitioner knew more instead of less than the average layman about hydrotherapy. It is, to say the least of it, ignominious to show a complete lack of knowledge when asked questions by one's patient.—I am, etc.,

G. D. KERSLEY,
Hon. Sec., Committee for the Study of Medical Hydrology in Great Britain.

Bath, Jan. 24.

The Problem of the Final M.B., B.S.Lond.

SIR,—As the present discussion on this subject, which is vitally important to London medicine and its students, seems to have degenerated into a personal and political one, and as this seems likely to obscure the real point at issue, may I state the case from the point of view of one who has no axe to grind?

The primary cause of the falling away from the final examination of students who have started upon its course is the fact that the Conjoint Board offers to the student an easier examination (at a considerably heavier charge) which he can begin taking six months before the completion of his medical training, which he can take in parts, and which allows him to take any part he has failed in again in three months' time. Herein lies the key to that £16,000 which the financial foresight of the Colleges

manages to guide into their otherwise rather empty coffers.

The arguments of the students with whom I have discussed the matter are these: (1) That they can begin taking the Colleges' examination six months before they can sit for that of the London University. (2) That by taking it they can with more certainty qualify up to time and are then "off" their parents' hands—a noble aspiration. (3) That if they fail in the M.B., B.S. they are referred for six months against the Colleges' three. (4) That when qualified they can take a hospital appointment, or otherwise earn a living, and can take the London University examination at leisure—a dangerous argument, as experience proves. (5) That it gives them practice at writing examination papers, at which they get no practice in their particular hospital. Lastly, there is one argument which is not always mentioned, and that is that some of them are in a hurry to get married.

In my opinion these arguments are theoretically sound, and if the intentions which they embody were carried out there would be little to say against them, save that they carry with them that awful waste of £16,000, which might be used to greater advantage to the students. But results show that the ambition to take the higher examination too often fades away, and the reasons are not far to seek. If I put aside the powerful narcotic effect of the drug prescribed by Cupid the following appear to me to be the more important. (1) The student is called upon to take the London examination almost immediately after the completion of that of the Colleges; he finds himself examination-weary, and is unable to summon the necessary grit for further work. (2) By taking the Colleges' examination in parts he almost certainly neglects those subjects in which he has passed to concentrate upon those for the final part, and these neglected subjects will have to be revised in the short time between the two examinations. If he fails in the M.B., B.S. examination he has to wait another six months before the next examination. On the assumption that he passes at the next attempt he will have spent a whole year in taking mere qualifying examinations—an unjustifiable waste of time in the life of a medical man. Is it to be wondered at that only the more determined students are willing to face these conditions?

There is no doubt that all these troubles could be avoided by the institution of a State examination, and this should be our ideal to aim at. But while the State examination lingers there is much in the present trouble which could be avoided if the London examinations were held four times a year instead of twice. The examinations would be no easier, and much time and money would be saved. It would also enable the examiners to refer candidates for three, six, or more months according to the knowledge they have shown, and thus failure would not fall so heavily upon those who have only just failed to satisfy the examiners.

I have no wish to enter into the discussion of any other point in relation to the London examinations, of which I know there are many. I wish only to emphasize the opinion that if the examinations were held four times a year instead of twice the number of students entering for the examination would certainly be greater. And I feel sure that if the University could manage to make the change in the near future they would receive the gratitude of all their medical undergraduates.—I am, etc.,

STANLEY COLYER, M.D., B.S.Lond.

Mayfield, Sussex, Jan. 24.

SIR,—Had the subject under discussion been the number of University students taking the M.B., B.S. degree, then there would be some point in Sir Ernest Graham-Little's argument; but we have not been discussing this, but the percentage of students taking the degree. This being the case his deductions are not at all obvious.

I should not have thought that any statement of mine could be interpreted as suggesting that the Court had acquiesced to any lowering of the standard of the degree examination. Everyone who has anything to do with the University of London knows that the Court does not concern itself with academic matters, and therefore would not be in a position to know anything about the standard of the examination. Any remarks of mine, therefore, on this subject can clearly not have been applied to the Court.

Sir Ernest again repeats a statement which he made in the Graduates' Association manifesto that the Faculty Board proposed that "the examination in medicine, surgery, and midwifery for the final M.B. should in effect be conducted by the Conjoint Board on its present standard." Had Sir Ernest taken the trouble to read the Senate minutes on the subject he would have found that "the Faculty Board have come to no decision in regard to these suggestions."

Professor Greenwood's peculiar form of humour makes it rather difficult to follow his arguments. In any case the tone of his letter relieves me of any necessity for a reply.

A great deal has been written in the course of this correspondence that must be very confusing to those who are not thoroughly conversant with the internal workings of the University. As I do not propose to trouble you with any further letters on the subject, may I just again point out what are the real points at issue. In order to find a solution to the problem of the small percentage of University medical students who take the M.B., B.S. degree, the Senate has authorized representatives of the Board of the Faculty of Medicine to consult with the Royal Colleges. No proposals have been made by the Board and the field of discussion is entirely open. Any proposals that emanate from the conference will have to be referred to the Senate, and Sir Ernest Graham-Little and his friends will have ample opportunity to debate them. It seems to me a little unfortunate that Sir Ernest should have used a senatorial election in an attempt to hamstring these discussions from the start, and particularly that he should imagine that the support Mr. Mitchiner has received was entirely due to objections to the action of the Senate without taking into consideration the personal popularity of the candidate or the methods employed in obtaining that support.

As I pointed out in my first letter, Sir Ernest and his friends appear to take no interest in the student or in his educational career. They must be aware of the difficulties in arranging suitable courses of instruction for students who are preparing for the two sets of examinations which overlap in point of time, and they must further be aware of the strain, both mental and financial, which the present system entails. Fortunately, the Senate as reconstituted under the Act of 1927 (which Sir Ernest so vigorously opposed both in and out of Parliament) includes for the first time among its members some of the deans of the medical schools. Thus people with a practical knowledge of these problems now have some say in the policy of the University. They realize that the Conjoint Board cannot be dismissed as a negligible factor, and that the present condition can only be improved by cut-throat competition or by co-operation. Of these two choices the latter appears to be the more desirable. Only by conference is it possible to say whether it is practicable.—I am, etc.,

London, W.1, Jan. 24. A. M. H. GRAY.

SIR,—In the letters on this subject which appear in the *Journal* of January 15 both your correspondents strike the same note. Both complain that there are available in London at the same time two qualifying examinations, and that therefore there is entailed needless work for two sets of examiners and double expense for the students or their parents. Why fix on the number two? There used to be more in my day—nearer the round half-dozen if one counted those in the provinces as well. Such arguments as those contained in your correspondents' letters are entirely beside the point, which is of far greater importance than one would judge from their letters. Sir Ernest Graham-Little in the latter half of the opening paragraph of his letter in the *Journal* of January 22 puts the matter clearly; and I would especially draw to this letter the attention of all London graduates and others interested in this question.—I am, etc.,

Llandilo, Carm., Jan. 24. J. H. LLOYD.

Correct Footwear

SIR,—In the correspondence on this subject I have looked in vain for any suggestions as to what constitutes correct footwear. If one examines the average shoe after it has been worn for some time the sole is usually most worn along its outer border, showing that the principal weight of the body is carried by the outer side of the foot. When the normal foot is on the ground most weight is borne by the heel, the inner arch, and the great toe. The foot is slightly everted and abducted, and there is no lateral movement at the ankle-joint. If the weight is displaced outwards, as in the modern shoe, the foot becomes inverted and adducted, and the weight falls on the outer arch and the distal portion of the transverse arch formed by the heads of the metatarsals. The latter collapse and draw down the corresponding phalanges with them. This causes apparent shortening of the toes by tilting them upwards and backwards. This movement is resisted by the upper of the shoe, and deformity results. The toes become crowded together and pressed against the shoe, corns, callosities, hammer-toes, etc., resulting. The toes may become twisted or displaced either behind or in front of their neighbours, and show evidence of pressure from the shoe, from the other toes, or from both. The great toe no longer supports the body weight, tends to be displaced outwards, and may lie against the second toe or above or below it; a bunion sooner or later develops on its metatarso-phalangeal joint.

The aim of treatment is to bring the foot back to the position of slight abduction and eversion, with the body weight supported by the heel and great toe. This is done by building up the sole of the shoe to make a curved inclined plane centred on the metatarso-phalangeal joint of the great toe, and by stiffening the remainder of the sole to the heel. This raises the depressed metatarsals and outer side of the sole, keeps the foot everted, and displaces the weight of the body to the heel and great toe. The fore part of the foot is broadened and the toes are no longer crowded together. The phalanges are straightened and the foot is lengthened; the balance of the body is restored.—I am, etc.,

London, N.11, Jan. 23. W. SIMPSON.

Pasteurization of Milk

SIR,—May I thank Dr. Maule Horne for his courteous letter and regret that Dr. Hawthorne's was not equally so (*Journal*, January 22, p. 199). The milk supply of our great towns is in a parlous state, and possibly nothing but pasteurization can make it endurable, but that is no reason why more wholesome methods should not be tried wherever possible. My letter (January 15, p. 148) was written simply to give an account of our experience, and to plead that compulsory pasteurization for the whole country would be a great mistake. Dr. Hawthorne's assumptions are great, but one should be contradicted at once in the general interest. Letchworth is not a "rural retreat" which has no relation to the busy life of the people. The foundation of Letchworth has been the most successful piece of public health work in this country during the past thirty years. It is characteristic that it is far better known and imitated abroad than in England, and Dr. Hawthorne will be interested to hear that our "rural retreat" contains over a hundred factories.—I am, etc.,

Letchworth, Jan. 22. NORMAN MACFADYEN.

INTERNATIONAL CONGRESS FOR PSYCHOTHERAPY, OXFORD, 1938

From July 29 to August 2, in Balliol College, Oxford, the International Medical Society for Psychotherapy will hold its tenth annual congress. The first event will be a reception on the Friday night. Papers will be read and discussed on Saturday morning and afternoon, Sunday afternoon, Monday morning and afternoon, with intervals for entertainment and recreation, and the Congress will break up at midday on Tuesday.

The Congress is under the presidency of Professor C. G. Jung, who is assisted by a Council representative of the British Medical Association, the Medical Section of the British Psychological Society, the National Council for Mental Hygiene, the Child Guidance Council, and several other bodies, and in co-operation with the Board of Control. The languages of the Congress will be English, German, and French. Summaries of the papers read will be provided for all members in the three languages; adequate interpretation will be provided for the discussions. Delegations have been invited from Germany, Austria, France, Holland, Switzerland, U.S.A., Rumania, Hungary, Czechoslovakia, Poland, Norway, Sweden, Denmark, Belgium, Italy, and it is hoped that a large and representative number of British delegates will attend to welcome and exchange views with their colleagues from abroad.

The purpose of the International Medical Society for Psychotherapy is to provide a platform for all schools of medical-psychological thought; and the characteristic of the congresses held by it hitherto has been the catholicity of approach. Up to 1936 the society held its congresses in Germany. The 1937 Congress met in Copenhagen; and this year's meeting in Oxford will be the first occasion on which a congress of the society has taken place in an English-speaking country. At the last Congress it was decided that one of the main themes for discussion in 1938 should be psychotherapy at the various periods of life.

Details concerning the programme and accommodation will be announced later. The fee for membership of the Congress has been fixed at a sum not exceeding 17s. It would greatly assist the organizers if all those interested in or intending to attend the Congress would communicate immediately with the honorary secretary, Dr. E. B. Strauss, 81, Harley Street, London, W.1.

As there are so many specialized sections of applied chemistry which are on the fringe of the work of the Society of Chemical Industry's subject groups, such groups are to be allowed to form panels. The first panel will deal with microbiology as applied to all industries utilizing micro-organisms—for example, food, agriculture, dairy, leather, and the fermentation industries. At the same time the panel will deal with the prevention of micro-organisms and such subjects as the microbiological spoilage of raw or manufactured materials.

Medico-Legal

A GAP IN THE POISONS ACT

By the Pharmacy and Poisons Act, 1933, the poisons in Part I of the Poisons List can only be sold by an authorized seller of poisons—that is, a member of the Pharmaceutical Society. The society constantly prosecutes unauthorized retailers for selling drugs containing Part I poisons, which are numerous. Recently the society prosecuted a "drug-store keeper" for selling asthma tablets containing ephedrine, which is a Part 1 poison.[1] The solicitor appearing for the society said that the packet was not marked "poison," but bore a warning that it was dangerous to exceed the stated dose. The retailer said that he stocked many thousand varieties of drugs, and that this medicine had been ordered by an assistant without his knowledge. The solicitor pointed out that the Pharmacy and Poisons Act, 1933, imposed no restrictions on wholesalers, and that anyone could order any quantity of poison he wished from a wholesaler. The magistrates imposed a small fine.

The class of persons exempted from the working of the Act is very large, and to throw on the wholesaler the responsibility of selling poisons only to certain persons would be to impose a severe and perhaps unfair burden. On the other hand, the Act is doubtless evaded or ignored by a number of retailers, and the Pharmaceutical Society's inspectors may be unable to prosecute in more than a small proportion of cases of infraction of the Act. It ought to be possible to devise some measure of control which, while not unduly hard on the wholesalers, would prevent Part I poisons coming into the hands of persons who are not authorized to sell them.

PROBATION AT MENTAL HOSPITAL

A Legal Experiment

Sexual offenders are apparently becoming more numerous, and give great trouble to magistrates' courts. The offenders are usually not criminals at all, but victims of some psychological disorder which may be amenable to treatment. Facilities for treatment are slowly becoming available in large centres, and magistrates are recognizing its value. One of the best-known agencies in London is the Institute for the Scientific Treatment of Delinquency. In the provinces, however, where out-patient clinics for psychological disorders are few, patients of this kind are sometimes best treated as in-patients at a mental hospital, where the staff are willing and able to look after them. The Wakefield magistrates recently[2] made a probation order in the case of a young man charged with a sexual offence, containing a condition that he should enter a certain mental hospital for six months as a voluntary patient. The court was satisfied that the offence was the result of a mental abnormality, and the man was eager to be helped to overcome it and willingly consented to the condition. The magistrates, in imposing this condition, expressly took the risk that they were acting beyond their legal powers, and hoped that, if they were, the law would soon be amended to enable magistrates to impose residence at a mental hospital as a condition of probation.

The Probation of Offenders Act, 1907, Section 1, which introduced probation for the first time, as amended by the Criminal Justice Administration Act, 1914, s. 8 (2), provides that when a court thinks that the charge is proved but that it is expedient to release the offender on probation it may, without proceeding to conviction, make an order discharging the offender conditionally on his entering into a recognisance to be of good behaviour and to appear for conviction and sentence when called on at any time during the period of the order. The order may contain several conditions, including supervision by a named person and of a particular kind, and such additional conditions with respect to residence and any other matters as the court may, having regard to the circumstances, consider necessary to prevent the repetition of the offence. Obviously, a court could not impose a condition that the offender should become a voluntary patient at a mental hospital if he did not wish to do so or the hospital superintendent did not wish to accept him. Indeed, no good purpose would be served by making this condition. If, however, the offender consents to be a voluntary patient and the hospital will take him, the language of the Act appears amply wide enough to allow the court to make his residence at the hospital as a voluntary patient a condition of the probation order. As a matter of everyday fact, every condition for a probation order is really imposed with the consent of the offender, and the value of the method depends on his co-operation. The legal validity of this probation order can only be called in question on appeal to quarter sessions. In the circumstances no one is likely to lodge an appeal, and as no court is likely to be imprudent enough to impose such a condition against the desire of the offender, the Wakefield example may be followed for some time before its legal merits are investigated by a higher authority.

[1] *Manchester Guardian*, January 16.
[2] *Leeds Mercury*, January 13.

Obituary

W. G. SYM, M.D., F.R.C.S.ED.

Consulting Ophthalmic Surgeon, Edinburgh Royal Infirmary

The death occurred on January 19 of Dr. William George Sym, emeritus lecturer on diseases of the eye in the University of Edinburgh. Dr. Sym was born at Edinburgh in 1864, and after a medical course at Edinburgh University graduated M.B., C.M. in 1886. He had already begun to take a special interest in ophthalmology, and decided to devote his professional life to this specialty. In 1889 he took the degree of M.D., and in the same year became a Fellow of the Royal College of Surgeons of Edinburgh. He held numerous appointments, such as ophthalmic surgeon to Leith Hospital, to the Eye, Ear, and Throat Hospital at Cambridge Street, Edinburgh, and in 1890 was appointed assistant ophthalmic surgeon to the Royal Infirmary of Edinburgh, becoming ophthalmic surgeon-in-ordinary in 1905. He relinquished this post in 1920 after the usual period of fifteen years, when he was appointed consulting ophthalmic surgeon to the institution. He was also for some fifteen years consulting ophthalmologist to the Scottish Command of the Army. He was a Fellow of the Ophthalmological Society, and for some years acted as editor of the *Ophthalmic Review*. He was the author of a well-known textbook on *Diseases and Injuries of the Eye*, published in 1913, and translator of the English edition of Adams's *Handbook of Treatment for Diseases of the Eye*. He also contributed many papers to periodical literature on subjects dealing with his specialty, such as "Simple Rules for Determining the Ocular Muscle Paralysed," *Edinburgh Medical Journal*, 1898. As a clinician and teacher he was specially distinguished as a careful observer, a skilful operator, and a lucid lecturer and demonstrator. He enjoyed great popularity as a consultant and had a large ophthalmic practice. For three years he was a member of the Ophthalmic Committee of the British Medical Association.

In addition to professional activities Dr. Sym took a wide interest in public work, and was a member of many boards and public bodies Among others he was a governor of Donaldson's Hospital, John Watson's Institu-

tion, and the Dean Orphanage, all educational institutions, and he was for many years a member of the Education Authority of Edinburgh. He had for long been one of the directors of the Royal Blind Asylum, and recently became chairman of the managers of the Thomas Burns Home for Blind Women. He was prominent in the activities of the Church of Scotland, having been for many years one of the leading members of St. Cuthbert's Kirk Session, Edinburgh, and from time to time a member of the General Assembly of the Church of Scotland. He was physically a man of great activity and a keen golfer, curler, and bowler.

Dr. Sym is survived by his widow and by several sons and daughters, of whom one daughter is an M.D. of Edinburgh University and a son is at present a student of medicine. A funeral service was held in St. Cuthbert's Church, Edinburgh, on January 22, which was attended by a large number of professional colleagues and of representatives from the various institutions with which Dr. Sym had been connected.

OTTO LEYTON, M.D., D.Sc., F.R.C.P.

Physician to the London Hospital

We announce with regret the sudden death on January 21 of Dr. Otto Leyton, physician to the London Hospital, who was well known for his clinical studies on diabetes. A letter from him on one aspect of insulin therapy appeared only last week in our correspondence columns.

Otto Fritz Frankau Grünbaum (he changed his name by deed poll to Leyton in 1915) was born on October 20, 1873, the younger son of Joseph Grünbaum, a naturalized British subject. His elder brother Albert, who died in 1921, had been professor of pathology in the University of Leeds. From the City of London School he went to Trinity College, Cambridge, and there gained first-class honours in Part I and Part II of the Natural Sciences Tripos. He continued his medical studies at St. George's Hospital, took the M.A.Cantab. in 1898, the B.Ch. in 1900, and proceeded M.D. in 1904, having in the meanwhile obtained the M.R.C.P. diploma and the D.Sc. degree of the University of London. He had been house-physician at the West London Hospital, and was for a time assistant physician at the Belgrave Hospital for Children and physician to out-patients at the City of London Hospital for Diseases of the Chest. For some years before election to the visiting medical staff of the London Hospital he worked as clinical pathologist at King's College Hospital. In 1909 he became a Fellow of the Royal College of Physicians. At the London Hospital Medical College he was lecturer on therapeutics, and he had examined in pharmacology for the University of London. He was honorary secretary of the Section of Pathology at the Annual Meeting of the British Medical Association in Belfast in 1909, and vice-president of the Section of Pharmacology and Therapeutics and Dietetics at the Aberdeen Meeting just before the outbreak of war in August, 1914. Two years later he published a paper on the examination of the soldier's heart, and a book embodying three lectures on the treatment of diabetes mellitus by alimentary rest, expounding the method known as the "Allen" treatment, of which a full abstract had appeared in the *British Medical Journal*; he also contributed chapters on the internal secreting glands to the fourth and fifth editions of Price's *Textbook of Medicine*.

Dr. Leyton leaves a widow, and one son and one daughter. The funeral took place at Medmenham, near Marlow, on January 25, and a memorial service was held in the chapel of the London Hospital at the same time.

Many members of the medical profession, particularly those interested in tropical hygiene, will have heard with regret of the death of Major ERNEST EDWARD AUSTEN, D.S.O., late Keeper of Entomology at the British Museum (Natural History). Austen joined the staff of the Museum in 1889 as an assistant in the Department of Zoology, from which the Department of Entomology was separated in 1913. He took part in the first expedition of the Liverpool School of Tropical Medicine to Sierra Leone and served on many committees investigating trypanosomiasis and the tsetse fly. He was a member of the committee of management of the Imperial Institute of Entomology and wrote valuable books and pamphlets on blood-sucking flies. Major Austen served at first during the war as a combatant officer, but was transferred later to the Egyptian Expeditionary Force for special duty on malaria and other insect-borne diseases

Dr. ROBERT ENWRAIGHT LAUDER, formerly medical officer of health for Southampton, died at his home in Millbrook Road on January 19, at the age of 73. He took the qualifying diplomas of the Edinburgh Royal Colleges in 1886, the D.P.H. in 1890, the F.R.C.S.Ed. in 1893, and the M.D. of Durham University in 1906. After serving as a medical officer for the South African Field Force in the early part of the South African War Dr. Lauder was appointed in 1901 medical officer of health under the county borough of Southampton and the Port Sanitary Authority; he was also medical superintendent of the borough and port fever hospitals, medical officer to the Education Authority, and medical inspector under the Aliens Act. During the great war he was medical officer in charge of the University War Hospital at Southampton, and officer commanding the 7th Sanitary Company, R.A.M.C.(T.). Dr. Lauder joined the British Medical Association in 1903, was chairman of the Southampton Division in 1922, and again from 1928 to 1930, in which year he resigned his appointments in the Public Health Service. He was responsible for twenty-nine consecutive annual reports on the health of the borough and port of Southampton.

Universities and Colleges

UNIVERSITY OF OXFORD

At a congregation held on January 20 the following medical degrees were conferred:

D.M.—A. M. G. Campbell.

B.M.—T. Gadian, C. W. Rayne-Davis, I. B. Pirie, C. M. F. Walters

UNIVERSITY OF CAMBRIDGE

At a congregation held on January 22 the following medical degrees were conferred:

M.B., B.CHIR.—*S. R. F. Whittaker, *J. B. Bunting, *D. O. Wharton, *B. D. Whitworth, J. K. Denham, E. H. L. Wigram, J. Sutcliffe, A. S. Bookless, K. S. Mullard, D. A. P. Anderson, J. L. Griffith, C. F. Barwell, S. C. Truelove, A. L. Fawdry, A. P. Kitchin, J. L. W. Ball, G. A. Burfield, W. D. Doey, S. W. G. Hargrove, G. J. G. King, L. B. Paling, L. C. de R. Epps, H. S. Kellett, P. H. Lenton, G. E. Adkins, R. T. Johnson, S. A. H. Lesser, G. H. Wooler.

M.B.—F. B. Turner.

* By proxy.

UNIVERSITY OF LONDON

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN PUBLIC HEALTH.—*Part I:* S. Amarasinghe, P. H. R. Anderson, S. N. Chelliah, F. C. L. B. B Crawford, P. A. Crowley, L. D. P. Dharmaratne, C. W. Dixon, R. Y. Dunlop, A. C. Gee, F. W. Gilbert, M. G. Hyder, O. G. Lloyd, A. L. St. A. McClosky, G. A. Macgregor, I. M. Macgregor, M. Markowe, J. S. Minnett, F. Noronha, P. X. O'Dwyer, S. S. Pillai, A. I. Ross, A. F. H. Stewart, Emily S. D. Thomson, S. C. Thurai-Rajah, M. Watkins, Helen E. Wight.

No. 2

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 15, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 125 great towns (i) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns (ii) in Eire. (e) The 10 principal towns (iii) in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1928-36 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	41	8	7	—	3	42	7	21	1	1		
Deaths		2	—				4	4				
Diphtheria	1,659	179	210	75	55	1,186	158	216	49	35	1,256	184
Deaths	44	3	9	7	—	42	3	3	6	1		
Dysentery	288	65	122		—	25	19	4		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	4	—	—		—	9	1	2		—		
Deaths		1					2					
Enteric (typhoid and paratyphoid) fever	29	3	1	5	—	57	3	2	1	1	23	—
Deaths	1	—	3	—	—	—	—	—	—	1		
Erysipelas			75	15	2			86	6	10		
Deaths		1					—					
Infective enteritis or diarrhoea under 2 years												
Deaths	45	13	6	2	3	41	9	7	8	3		
Measles			1,786		582*			56		1		
Deaths	44	9	13	1	11	11	—	—	4	—		
Ophthalmia neonatorum	92	7	25		—	76	4	28		1		
Deaths												
Pneumonia, influenzal§	1,647	159	21	2	11	2,823	451	441	40	23	1,875	224
Deaths (from Influenza)	91	15	11	1	4	1,110	344	220	21	64		
Pneumonia, primary			344	12				490	8			
Deaths		31		20	3		48		19	39		
Polio-encephalitis, acute	1	—				1	—					
Deaths		—					—					
Poliomyelitis, acute	8	2	—		—	5	—	—		—		
Deaths		—					1	—				
Puerperal fever	1†	1	19	3	—	40	6	14	2	—		
Deaths		—					3‡					
Puerperal pyrexia	186	25	17		—	149	21	28		3		
Deaths												
Relapsing fever	—	—	—		—	1	—	—		—		
Deaths	—	—	—									
Scarlet fever	2,289	136	509	83	72	1,513	166	337	96	35	1,949	238
Deaths	6	2	2	—	2	7	2	1	2	1		
Small-pox	—	—	—		—	2	—	—		—		
Deaths	—	—	—	—	—	—	—	—	—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths	—	—	—	—	—				—	—		
Whooping-cough			90		5			661		17		
Deaths	23	6	—	1	—	29	7	21	3	1		
Deaths (0-1 year)	529	106	86	29	32	477	95	95	40	33		
Infant mortality rate (per 1,000 live births)	89	88				76	79					
Deaths (excluding stillbirths)	6,147	1,213	860	249	210	7,700	1,996	1,161	283	340		
Annual death rate (per 1,000 persons living)	15.2	15.3	17.6	16.8	18.6	19.2	24.9	23.8	19.3	32.5		
Live births	6,668	1,326	918	307	252	6,099	1,131	893	337	264		
Annual rate per 1,000 persons living	16.4	16.7	18.7	20.7	22.3	15.2	14.1	18.3	23.0	25.3		
Stillbirths	259	30				267	46					
Rate per 1,000 total births (including stillborn)	37	22				42	39					

(i) 122 great towns in 1937
(ii) 12 " " " "
(iii) 9 " " " "

* 567 cases in Belfast alone and 15 cases in Lisburn Urban District.

† All cases notified as puerperal pyrexia after October 1, 1937.

‡ Deaths from puerperal sepsis.

§ Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Typhoid Fever

Croydon Outbreak.—There have been no fresh cases of typhoid fever since January 1, and the total notifications are 290. This number is exclusive of 5 nurses who have contracted the disease from contact with patients, three of them since January 1. The death on January 25 of a patient who contracted the disease eleven weeks ago brings the total number of deaths to 41.

Dysentery

The dysentery notifications for England and Wales have shown an appreciable increase over last week—280 cases against 256—while a proportionate increase has been encountered in London—65 notifications against 58 in the previous week. There have been 30 additional cases of Sonne dysentery notified in Bedford since last week, when 70 cases were notified in one day. As the milk supply is being either pasteurized or boiled it is probable that the majority of the notifications are contact cases.

Measles

Measles continues to spread in the principal large cities of the British Isles, particularly in Glasgow, in which the number of cases rose to 1,409, an increase of 608 on the previous week, while in Edinburgh the number notified was 327, as against 135 for the previous week. In Belfast, while the number of cases notified decreased from 592 to 567, the number of patients with measles in the Belfast Union Hospital rose from 154 to 176. The increase of admissions has severely taxed the accommodation at the Belfast Union Hospital. In London the expected measles epidemic is appearing more slowly than was anticipated. The number of cases admitted daily to the hospitals of the London County Council has risen during the week from some 20 to 30 admissions per day. While the Council has ample hospital accommodation at its disposal, it has found difficulty in securing a sufficient number of experienced nurses to staff its fever hospitals; as a result it has decided to place a restriction on the admission of infectious diseases, with the exception of diphtheria, to severe or complicated cases, or cases in which domiciliary treatment is for any reason deemed unsuitable.

Medical News

The Princess Royal will open the new extension to the Institute of Ray Therapy, Camden Road, N.W., on Saturday, February 5, at 3 p.m. Lord Horder will preside.

The following lectures will be given at the Royal Institution, 21, Albemarle Street, London, W., at 5.15 p.m., Tuesdays, February 1, 8, and 15, Professor J. D. Bernal, F.R.S., "Molecular Architecture of Biological Systems"; Thursday, February 3, Dr. E. J. Salisbury, F.R.S., "The Film in Biology: Plant Life"; Thursday, February 10, Mr. H. R. Hewer, "The Film in Biology: Embryology"; Friday, February 18, Professor E. N. da C. Andrade, D.Sc., F.R.S., "Science in the Seventeenth Century"; Thursdays, March 10, 17, 24, and 31, Sir Frederick Keeble, F.R.S., "The Fertility of the Earth."

A debate on the motion "That the Law on Abortion Requires Reform" has been arranged by the Fellowship of Medicine to take place at 1, Wimpole Street, W., on Wednesday, February 9, at 8.30 p.m. Sir Beckwith Whitehouse will propose the motion, and Dr. W. H. F. Oxley will oppose it. A discussion will follow. The chair will be taken by Mr. Justice Humphreys. The meeting is open only to members of the medical profession and the Medico-Legal Society, and admission will be by ticket obtainable from the Fellowship, 1, Wimpole Street, W.1.

A discussion on "The Ministry of Health New Model Building By-laws" will take place at the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W., on Tuesday, February 8, at 5.30 p.m.

The annual general meeting of the Institute of Hospital Almoners will be held at 6 p.m. on Friday, February 4, at the Westminster Palace Rooms, 44, Victoria Street, S.W., when Dr. Henry Yellowlees will give an address entitled "Voluntary Social Service."

The next Réunion Médico-Chirurgicale de Morphologie will take place in Paris at the Maison de Santé Velpeau, 7, Rue de la Chaise, on February 9 at 9 p.m. The programme will include the presentation of a revue entitled "Physical Re-education" by Dr. Houdre of Paris. Dr. Marceron will speak on a morphopathological study of the motorist; M. Laville will discuss heredity in relation to morphology (with special reference to the laws of Lapouge); Drs. Chwatt of Lodz and Claoué, keloids and hypertrophic scars; Dr. Rochu-Méry, the morphology and morphogenesis of the abdomen; and Dr. Nepveu will make a communication on paraffin injections. These meetings are held at monthly intervals, and are open to all specialists in various branches of medicine and surgery who are interested in morphology. Further information may be obtained from Dr. Claoué, 39, Rue Scheffer, Paris XVIe.

With the object of encouraging original medical research, the Court of the Grocers' Company offers one scholarship each year tenable for two years of the value of £300 for the first year and of £450 for the second year. Candidates must be British subjects under 35 years of age. Applications must be made by the middle of April. Forms of application may be obtained from the Clerk of the Company, Grocers' Hall, Princes Street, London, E.C.2.

The address of the Westminster Hospital Medical School is now Horseferry Road, Westminster, S.W.1 (telephone number Victoria 6041). The change took effect on January 1.

The King has granted Professor R. S. Dobbin, of the Medical Faculty of the Egyptian University, authority to wear the Insignia of Grand Officer of the Order of the Nile, conferred upon him by the King of Egypt.

A quarterly periodical with the title *Zeitschrift für Altersforschung* is to be published by Theodor Steinkopff of Dresden and Leipzig. Edited by Professors Abderhalden and Burger, it will be concerned with the physiology and pathology of old age, and will correlate the many original articles on various aspects, including the zoological, veterinary, and biochemical, which are published throughout the world.

An illustrated pamphlet of twenty-four pages, *Medical Aid for Spain*, is published at 3d. by the Spanish Medical Aid Committee, 24, New Oxford Street, London, W.C.1. It gives a brief account of the arduous work carried out by units organized by this body, whose president is Lord Addison, chairman Dr. H. B. Morgan, and vice-chairman Mr. Somerville Hastings.

In the November number of the *Industrial Bulletin*, published by the State of New York Department of Labor, L. J. Goldwater discusses the pharmacology and toxicology of diethylene glycol, recently used with such tragic results as a vehicle for sulphanilamide in an American commercial preparation. Reference to poisoning by "elixir sulfanilamide" was made in the *British Medical Journal* of December 4, 1937, p. 1129. A series of articles on the subject has appeared in the *Journal of the American Medical Association* during recent months.

Professor C. G. Jung of Zurich will visit London early in April and will give four seminars at the Tavistock Clinic, Malet Place, W.C., which will be open only to medical practitioners. The titles of the seminars (subject to confirmation by Professor Jung) are: (1) Personal Factors in the Production of the Psychoneuroses; (2) Racial Factors in the Production of the Psychoneuroses; (3) Symbolism in Organic Disorders; and (4) Prophylaxis (Personal and Social) of the Psychoneuroses. In addition Professor Jung will give one lecture open to the general public, the title of which will be "Intuition and its Place in Science and Life."

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS should be addressed to the Advertisement Manager. Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin).

QUERIES AND ANSWERS

"Cracking Skin"

Dr. A. E. MOORE (Histon, Cambs) writes: A patient of mine suffers from cracking of the skin of the hands and feet. As a girl she suffered from a cracked heel, and for the past twenty years both hands and feet have been affected. I should be glad of any help in diagnosis and treatment.

After-treatment of Circumcision

"A.B.C." writes: An elderly patient of mine had a circumcision performed some months ago. The glans is still tender and sensitive, especially about the corona. I should like suggestions for treatment.

A Case for Diagnosis

"PERPLEXED" writes: A patient of mine, a lady of 74, who has always been active and healthy, has for the last two months been subject to peculiar "attacks" recurring every day, sometimes after meals and sometimes when in bed. They vary in intensity, but only last for a minute or so. The pulse rate is slightly raised during the attack, which starts with the feeling of "a wave passing from the feet to the head." The skin of the cheeks is somewhat flushed and actually raised in patches for a few seconds, but it quickly fades. The patient feels quite well after the attacks. The blood pressure is 130 mm. Hg; the urine is normal, and so are the heart sounds.

The Squatting Position in Defaecation

Dr. J. H. BADCOCK (Bury St. Edmunds) writes: No one who has adopted the squatting position can have any doubt of its usefulness. To adapt the ordinary closet all that is needed is a light movable footstool about 18 inches by 6 inches, and of the required height. An upturned box, with a hole cut in the bottom for easy handling, answers perfectly. This is better for the aged or infirm than a low seat.

Dr. J. R. WHITWELL (London, W.1) writes: Many years ago I installed in my house one of Messrs. Doulton's "health closets." The result was so satisfactory that I felt compelled to say *Ruraliter in (com)modo sed fortiter in re.*

Hair Dye

Dr. HENRY J. KINGSLEY (London), in reply to "G.P.'s" question asking for a reliable dye for grey hair (*Journal*, January 22, p. 213), writes: I should recommend a bismuth preparation such as "entrupal" or "restorene," which both may be obtained from John Bell and Croyden Ltd. in London. The effect of these bismuth preparations on the hair is due to the interaction of the bismuth with the complex sulphur molecule of the hair keratin.

LETTERS, NOTES, ETC.

Rehabilitation Centres for Injured Workmen

Mr. GILBERT G. PANTER (secretary, Royal Northern Hospital) writes: Dr. Eastwood, in his letter published in the *Journal* of January 22 (p. 202), with reference to the good work which is being done by fracture clinics, asks where can existing fracture clinics be found. I should like to say that the Royal Northern Hospital, which is one of the hospitals dealing with a very large number of fracture cases, has established at Holloway a whole-time fracture clinic and follow-up system for the benefit of fracture cases, particularly those involved in road traffic and industrial accidents.

Conservative Treatment in Oral Infection

Mr. J. H. OLVER, L.D.S. (London, W.1) writes: Oral sepsis is so often associated with rheumatic conditions that the mouth and throat are probably the first to be suspected. It is recognized now, however, that the most drastic methods may not be attended always with success; and also that, when this happens, the patient is apt to forget the painstaking nature of the attempts to relieve him and regret the loss of teeth which were more practical in use than the artificial substitutes. Deepening of the gingival trough and "pocketing" can, of course, produce a considerable amount of septic absorption. Extraction will cure it, but less drastic methods will produce the same result unless the teeth are loosened. Gingivectomy in some cases is essential; in others, in my opinion, almost as unwarranted as extraction. A dressing which destroys the unhealthy epithelium and stimulates renewal of the lost tissue under conditions which are more favourable to a normal state is available, and has been used successfully for years. The dressing which I have found most effective for this purpose is liquor cresol. sap. It is, of course, necessary to apply it with great care, using cotton or bibulous paper dressings of an appropriate size saturated with the drug. The dressings are inserted into the pockets, etc., all other and surrounding parts being carefully isolated and a saliva ejector used. The length of time the dressing is allowed to remain in contact with the part varies, but from one to five minutes is generally sufficient. When the affected surfaces are definitely whitened the dressing is removed, some sedative, such as phenol-camphor, applied, and the whole of the treated surfaces thoroughly irrigated with an atomizer. No massage must be attempted immediately after this treatment has been started, and the dressing should not be renewed until from six to ten days have elapsed. It is generally necessary to repeat the dressing three times, except in obstinate cases, which may require more extended treatment. When the gums no longer bleed readily and the surface is free from the glazed appearance one often sees in these cases, massage (lightly at first) with a rubber bristle brush, using an alcoholic mouth-wash, will help to keep the parts in a normal condition. It should, of course, be pointed out that very thorough removal of all exciting causes, such as calcific deposits, overhanging fillings, crown bands, etc., should be carried out either before, or a week following, the first dressing.

The Medical Directory—A Warning

Messrs. J. and A. CHURCHILL, Ltd., write: We wish to warn medical practitioners, particularly in the neighbourhood of Edinburgh, against a man who is visiting doctors' houses and who asks for the revision of a slip giving details of name, address, etc. He states that this information is required for the *Medical Directory*, and at the same time asks for some payment to be made to him. No charge is made for the insertion of name, address, qualifications, etc., in our directory, and therefore no person has our authority for making such a request. We shall be grateful for any information that will enable us to put an end to the activities of this individual.

Disclaimer

Dr. DONALD H. ISAAC writes to disclaim any responsibility for paragraphs in daily papers, and a placard in the town of Port Talbot, giving objectionable publicity to an operation performed by him.